Northern Virginia Park & Ride Lot Feasibility Study

Final Report

Prepared for:

Virginia Department of Transportation

Northern Virginia District

Prepared by:

BMI

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April 2003

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VIRGINIA DEPARTMENT OF TRANSPORTATION
Northern Virginia District
Transportation Planning Section

PREPARED BY:

BMI

with

Burgess & Niple, Inc.
Fitzgerald & Halliday, Inc.

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Executive Summary

EXECUTIVE SUMMARY

Study Purpose

The Northern Virginia District Transportation Planning Section of the Virginia Department of Transportation (VDOT) undertook this study to evaluate park and ride facilities throughout the District and develop a plan to identify and address existing and future needs. The study was conducted in coordination with staffs from Fairfax, Arlington, Prince William and Fairfax Counties, as well as staff from WMATA. The findings of this study will assist State and local governments in the programming of potential park and ride sites in Northern Virginia.

The Northern Virginia region is home to one of the most successful and well-utilized HOV facility systems in the United States. As an example, data from a recent VDOT study (*I-95/I-395 HOV Restriction Study, 1999*) showed that over 80% of the person trips approaching the Capital Beltway in the I-95 corridor and destined to the Arlington and Washington D.C. core area during the AM peak period are using either HOV or transit modes. Similarly, HOV facilities on I-66, the Dulles Toll Road, US Route 1 in Alexandria and other arterials in the Northern Virginia District provide a viable alternative to low occupant vehicle travel.

Park and ride facilities are a critical supporting element to successful HOV facilities. This study was initiated by VDOT to support planning efforts aimed at improving the park and ride system, thereby enhancing the existing and planned Northern Virginia District HOV system, as shown in Figure E-1. Park and ride lots that are exclusive to Metrorail and VRE users were not included in this analysis.

Assessment of Existing Park and Ride Lot System

The baseline assessment of the Northern Virginia District park and ride lot system included two primary activities: 1) creation of a comprehensive park and ride lot database and 2) creation of internet-ready text and graphics for use on VDOT's web site.

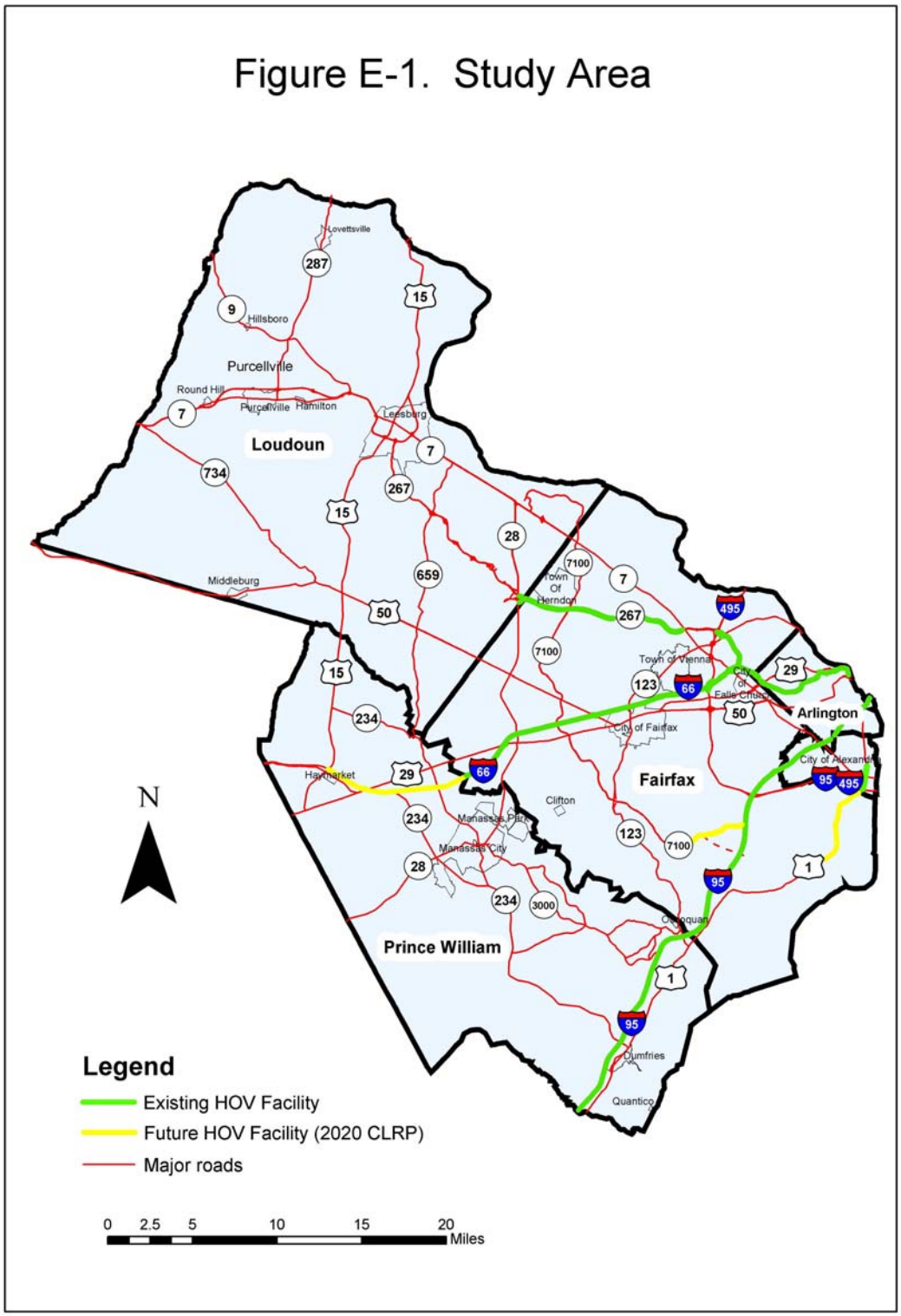
An extensive field data collection program was undertaken in early 2001 that included compilation of the following data elements for each of seventy-nine separate park and ride lots in the Northern Virginia District:

- Lot amenities
- Lot capacity and utilization
- License plates of Virginia-registered vehicles (used to identify origins of current lot users)

Table E-1 presents a summary of park and ride lot capacity and utilization for each jurisdiction.

One of the objectives of the baseline assessment was to provide information that could be communicated to the public to support VDOT's marketing and promotion of carpool, vanpool

Figure E-1. Study Area



and transit use in the major HOV corridors. Following completion of the data collection program, separate web pages were created for each park and ride lot for integration into VDOT's web site.

Table E-1. Summary of 2001 Jurisdiction Park and Ride Lot Capacity and Percent Utilization

Jurisdiction	Total P&R Lot Capacity	% P&R Lot Utilization
Arlington County	880	15.5%
City of Fairfax	129	10.9%
Fairfax County	7,265	52.8%
Loudoun County	1,234	43.1%
Prince William County	7,818	62.5%
Total	17,326	54%

Future Park and Ride Lot Demand

A key component of this study was to project future demand for park and ride facilities located within the Northern Virginia District. The demand methodology and subsequent needs analysis focused only on those park and ride lots oriented to the major HOV corridors and did not examine other lots, such as those at rail stations. This distinction was made due to the different characteristics of users of free public park and ride lots oriented to HOV facilities vs. parking at rail station lots and the fact that different funding sources are used for the two types of lots. The demand analysis focused on five of the commuter corridors and the roads that feed into them within the Northern Virginia District that provide access to HOV facilities:

1. I-95 - Prince William/Stafford County Line to Capital Beltway
2. US 1 - Prince William/Stafford County Line to Capital Beltway
3. I-66 - Prince William/Fauquier County Line to Capital Beltway
4. VA 7/Greenway/Dulles Toll Road – Loudoun/Clarke County Line to Capital Beltway (Dulles Toll Road – VA 28 to Capital Beltway, baseline assessment only)
5. Fairfax County Parkway – US 1 to VA 7

Two separate demand projection procedures were applied independently with the results compared and reconciled to produce a final set of demand projections. The reconciled projections were used to identify preferred areas for additional park and ride lot capacity to serve future projected demand.

Northern Virginia District park and ride lot demand is projected to increase by approximately 50% by the year 2020. The 2020 forecasts show a growth in demand of approximately 45% in the I-66 and I-95 corridors, while the Route 7 and Route 1 corridors are projected to exhibit higher percentages of demand growth.

Identification of Park and Ride Lot Needs

In order to identify areas in need of additional park and ride lot capacity, a statistical analysis of lot attributes and usage was conducted to determine those lot attributes that have the strongest correlation to lot usage. The results of this analysis provided useful information toward an understanding of why particular lots were underutilized and where potential new lots should be located. The results of the statistical tests showed that only three lot attributes met the criteria for finding a correlation:

1. Presence of lighting,
2. Presence of bus service, and
3. Direct HOV access.

In addition to understanding the attributes that encourage park and ride lot utilization, subarea demand projections were examined and compared with existing and programmed supply to help identify subareas within the Northern Virginia District where additional park and ride lot capacity may be needed. Table E-2 presents a summary of the subareas in which additional park and ride lot capacity was found to be needed in the future, along with the reasons for their selection and specific areas where new lot capacity would be most beneficial.

Table E-2. Future Subarea Needs

Subarea	Year	# of spaces*	Reason	Best Areas for New Lots
Leesburg	2005 2010 2020 Total	100 200 200 500	Demand growth due to population growth and planned expansion of bus service.	Near the VA7 / US 15 overlap (Leesburg Bypass) and the north end of the airport.
Springfield	2005	1000	Significant number of existing spaces are in leased/ shared use lots, which are less preferable than public-owned lots.	Close proximity to I-95, Fairfax County Parkway and/or Franconia-Springfield Parkway.
Centreville	2005	150	Imbalance in utilization of lots near VA 28 and US 29 vs. park and proffered lots.	Along VA 28 near US 29 and along US 29 west of VA 28.
Dumfries	2005 2010 2020 Total	50 50 50 150	Demand growth due to population growth to the south.	Along VA 234 near I-95 and near Triangle.
Dale City – Woodbridge	2010 2020 Total	400 650 1050	Demand growth due to local population growth and projected I-95/I-395 congestion levels.	Between Minnieville Road and US 1, with access to major arteries.

Table E-2. Future Subarea Needs (continued)

Subarea	Year	# of spaces*	Reason	Best Areas for New Lots
Gainesville	2005	100	Permanent lot preferred to accommodate potential demand growth associated with planned I-66 HOV extension.	Close proximity to I-66 interchange at US Route 29.
Mt. Vernon	2020	200	Permanent lot preferred to accommodate potential demand growth associated with planned U.S. Route 1 HOV lane extension.	Adjacent to US Route 1 near planned terminus of HOV lane extension at VA 235.

*Needs estimates rounded to nearest 50

Following a review of this list by the local jurisdictions, Loudoun County indicated that they were initiating an evaluation of potential new lot locations in the Leesburg area. Accordingly, they communicated a desire to have this study investigate potential locations for a new park and ride lot in the Purcellville area, in lieu of further investigations in the Leesburg area.

Investigation of a potential new lot in the Mt. Vernon subarea along US Route 1 should be undertaken upon completion of the ongoing VDOT US Route 1 Location Study.

Potential New Park and Ride Lots

Projected park and ride lot needs, and the subareas in which additional capacity is needed, were communicated to the local jurisdiction members of the study team. Following receipt of comments from the local jurisdictions and VDOT, seven potential sites were identified for evaluation using the following criteria:

1. Site access
2. Proximity to the HOV system
3. Proximity to major roads and highways
4. Transit service potential
5. User demand
6. Size and expansion potential
7. Land and lease acquisition
8. Land use and zoning
9. Safety and security
10. Community impacts

These seven new park and ride lot sites, which are shown in Figure E-2, were also evaluated in terms of potential capacity and cost to construct. Table E-3 summarizes the potential capacity and preliminary construction cost estimate of each proposed lot. A comparison of Tables E-2 and E-3 shows that the capacity of the potential park and ride lots exceeds the identified need. This is due to: 1) potential lot parcels were not

subdivided and 2) additional capacity beyond estimated need could be used to replace existing leased lots.

Table E-3. Size and Cost Estimates for Potential Park and Ride Lots

LOT	NUMBER SPACES	PRELIMINARY CONSTRUCTION COST ESTIMATE***
Purcellville	233	$610,000
Engineer Proving Ground (EPG)	884	$1,660,000
Route 234 Bypass/I-66	530	$1,050,000
US 1/Route 234*	438	Not estimated in this study
Minnieville Road/Caton Hill Road	951	$2,300,000
Telegraph Road	835	$1,550,000
Gainesville**	402	$770,000

* This lot replaces the existing lot on Route 234, which has 355 spaces. Construction costs were not estimated as part of this study.

** Gainesville lot will be constructed in two phases. The number of spaces and cost shown represent the ultimate buildout phase.

*** Preliminary construction cost estimate (basic elements only) does not include costs of lot amenities, stormwater management, utilities adjustment, off-site improvements, or other lot amenities. Preliminary cost estimate for Gainesville lot does not include right-of-way cost.

Implementation Plan

Short Term ~ 2005

- Purcellville
- Leesburg (County Investigation)
- Route 234 Bypass / I-66
- US 1 / Route 234
- Backlick North
- Backlick South
- Gambrill Road

} Currently Under Design

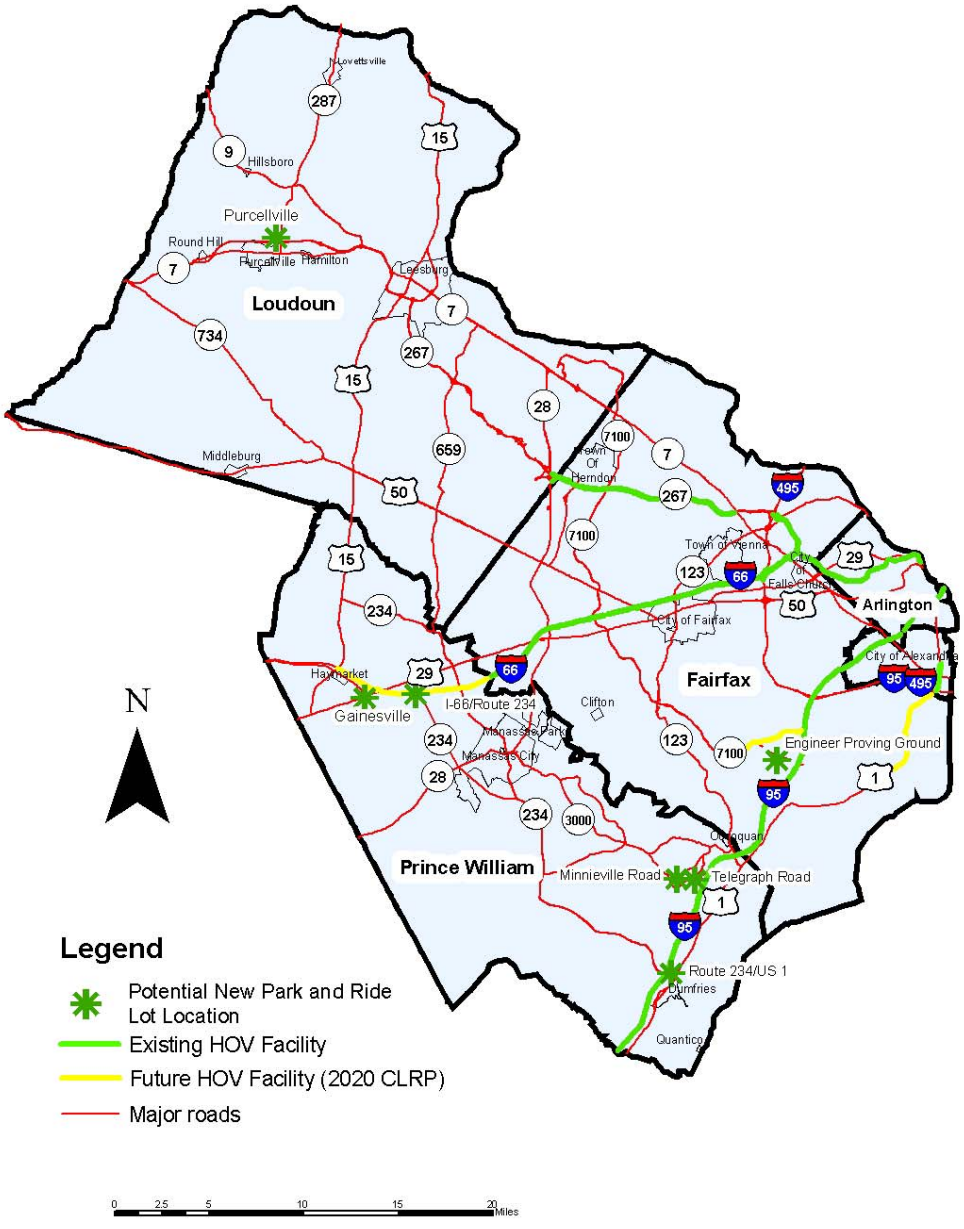
Mid Term ~ 2010

- Engineer Proving Ground (EPG)
- Gainesville
- Minnieville Road / Caton Hill Road
- Telegraph Road

Long Term ~ 2020

- Route 1 – Mt. Vernon

Figure E-2. Potential New Park and Ride Lots



1. Introduction

1.0 Introduction

The Northern Virginia (NOVA) District Transportation Planning Section of the Virginia Department of Transportation (VDOT) undertook this study to evaluate park and ride facilities throughout the District and develop a plan to identify and address existing and future needs. Results of this study are intended to help VDOT and local jurisdictions plan, program and design additional park and ride facilities to meet the future short and long term requirements.

1.1 Study Purpose

The Northern Virginia region is home to one of the most successful and well-utilized HOV facility systems in the United States. As an example, data from a recent VDOT study (*I-95/I-395 HOV Restriction Study, 1999*) showed that over 80% of the person trips approaching the Capital Beltway in the I-95 corridor and destined to the Arlington and Washington D.C. core area during the AM peak period are using either HOV or transit modes. Similarly, HOV facilities on I-66, the Dulles Toll Road, US Route 1 in Alexandria and other arterials in the Northern Virginia District provide a viable alternative to low occupant vehicle travel.

Park and ride facilities are a critical supporting element to successful HOV facilities. This study was undertaken by VDOT to support planning efforts aimed at improving the park and ride system, thereby enhancing the existing and planned Northern Virginia District HOV system, which is shown in Figure 1.

Specific products that addressed the purpose of this study included the following:

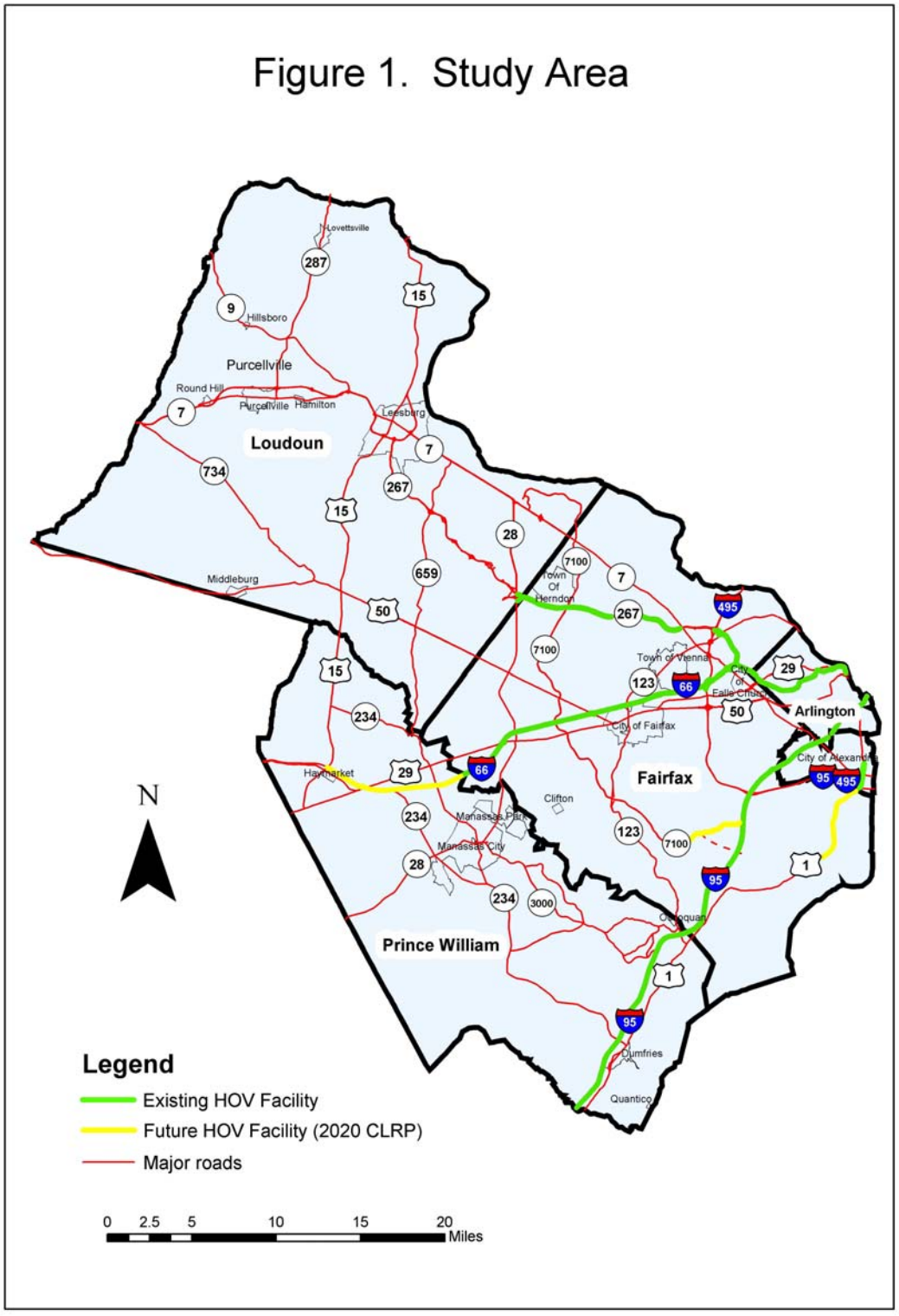
1. Comprehensive assessment of the NOVA District's park and ride lot system.
2. Web pages for use in the VDOT website.
3. Projection of park and ride lot demand and needs for short and long term planning horizons.
4. Evaluation of specific locations for new park and ride lots.
5. Conceptual plans and preliminary construction cost estimates for potential new park and ride lots.

1.2 Study Process and Coordination

VDOT assembled representatives from local jurisdictions and agencies into a study team to provide input and feedback to the study. These representatives included staff from local jurisdictions and transit agencies that were part of the Transportation Coordinating Council (TCC) Technical Committee and staff from MWCOG.

The scope of the study was shared with the TCC Technical Committee and the study team was also invited to attend the kick-off meeting for the study. Meetings were held and study findings and results were shared throughout the study at key milestones. Local jurisdictions provided feedback on the study methodology and played a critical support role in the study process.

Figure 1. Study Area



1.3 Report Organization

This report is organized as follows:

Section 2 describes the baseline assessment and summarizes the results.

Section 3 documents the demand methodology that was employed to develop projections of park and ride lot demand. Summaries of 2005, 2010 and 2020 demand are also presented.

Section 4 describes the technical process by which preferred areas were identified for potential new park and ride lots. A summary of these areas and park and ride lot needs in each area is also provided.

Section 5 documents the site evaluation process and results.

The following Appendices are provided:

Appendix A. 2002 Park and Ride Lot Utilization Data
Appendix B. Bus Boarding Data
Appendix C. Existing Lots by Subarea
Appendix D. Purcellville Park and Ride Lot Concept
Appendix E. EPG Park and Ride Lot Concept
Appendix F. Route 234 Bypass / I-66 Park and Ride Lot Concept
Appendix G. Minnieville Road / Caton Hill Road Park and Ride Lot Concept
Appendix H. Telegraph Road Park and Ride Lot Concept
Appendix I. Gainesville Park and Ride Lot Concept

2. Baseline Assessment

2.0 Baseline Assessment

The baseline assessment of the Northern Virginia District park and ride lot system included two primary activities: 1) creation of a comprehensive park and ride lot database and 2) creation of internet-ready text and graphics for use on VDOT's web site.

2.1 Park and Ride Lot Database

An extensive field data collection program was undertaken in early 2001 that included compilation of the following data elements for each of seventy-nine separate park and ride lots in the Northern Virginia District:

- Lot amenities
- Lot capacity and utilization
- License plates of Virginia-registered vehicles (used to identify origins of current lot users)

Figures 2, 3, and 4 show the locations of the park and ride lots in each jurisdiction.

Lot Amenities

The following lot amenities were inventoried and included in the park and ride lot database:

1. Phones - presence of phones within the lot
2. Lights – presence of lighting within the lot
3. Bus Stop – presence of bus stops within or adjacent to the lot
4. Bus Shelter - presence of bus shelters within or adjacent to the lot
5. Bike Racks – presence of bike racks within the lot
6. Sidewalks – presence of sidewalks leading to each lot
7. Trail Access - presence of trails in close proximity to each lot
8. HOV Access – access to HOV facility within one-quarter mile of the lot
9. Distance to HOV – distance in miles to a freeway HOV facility

Table 1 presents the lot amenities for each of the park and ride lots. The lot numbers correspond to the lot numbers shown in Figures 2 through 4.

Lot Capacity and Utilization

Lot capacity and utilization were inventoried at each of the seventy-nine park and ride lots. This data was collected on normal, non-holiday Tuesdays, Wednesdays or Thursdays between the hours of 10:30 AM and 2:30 PM. The results were compared to existing databases and a small number of the lots were re-visited to ensure the accuracy of the database.

Table 2 presents the capacity and utilization data. As shown, capacity and utilization were recorded for handicapped parking spaces as well. It should be noted that handicapped (HC) capacity and utilization is included in the overall capacity and utilization columns. The corridor, jurisdiction, owner and data collection date are also shown for each lot.

Figure 2. Fairfax County, Arlington County, and Alexandria Park and Ride Lots

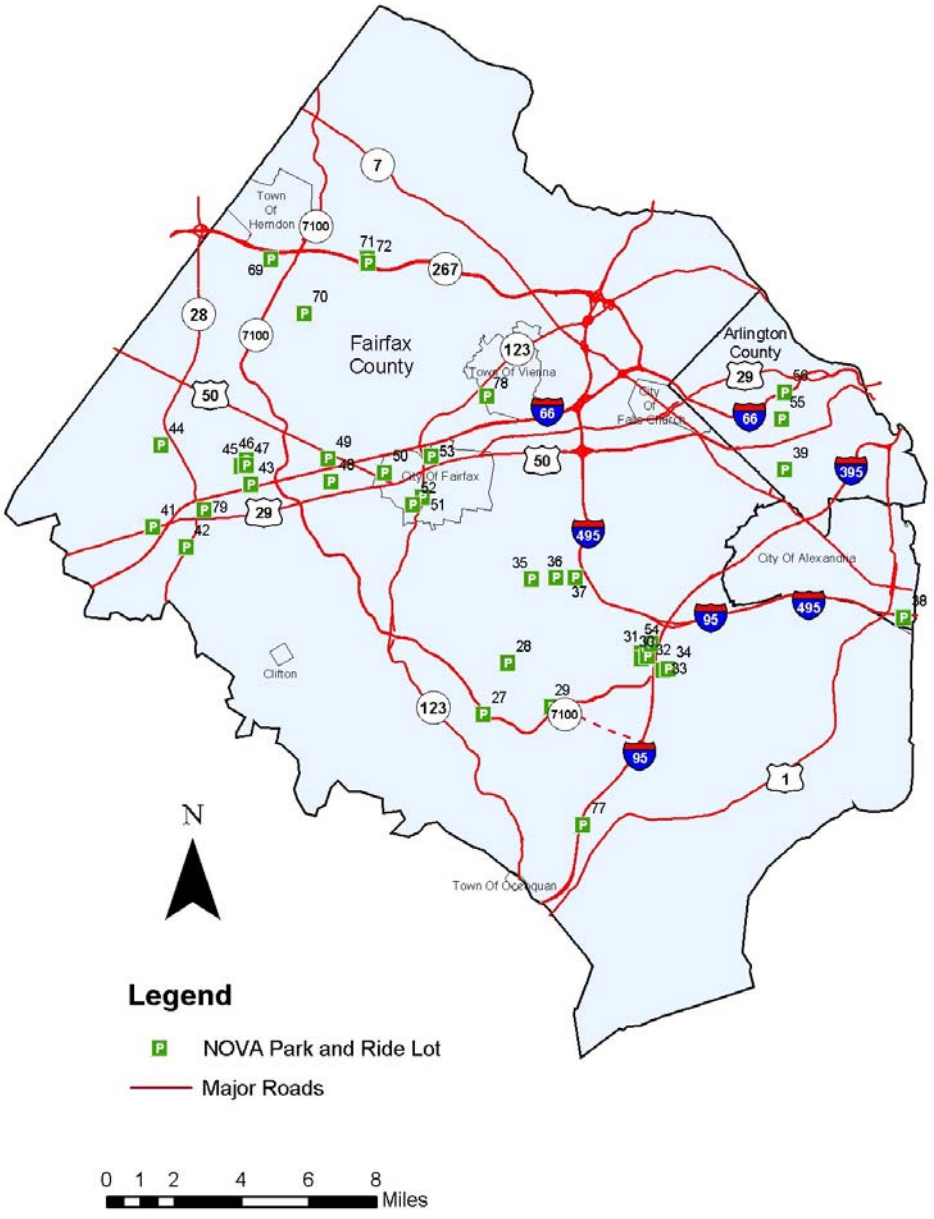


Figure 3. Prince William County Park and Ride Lots

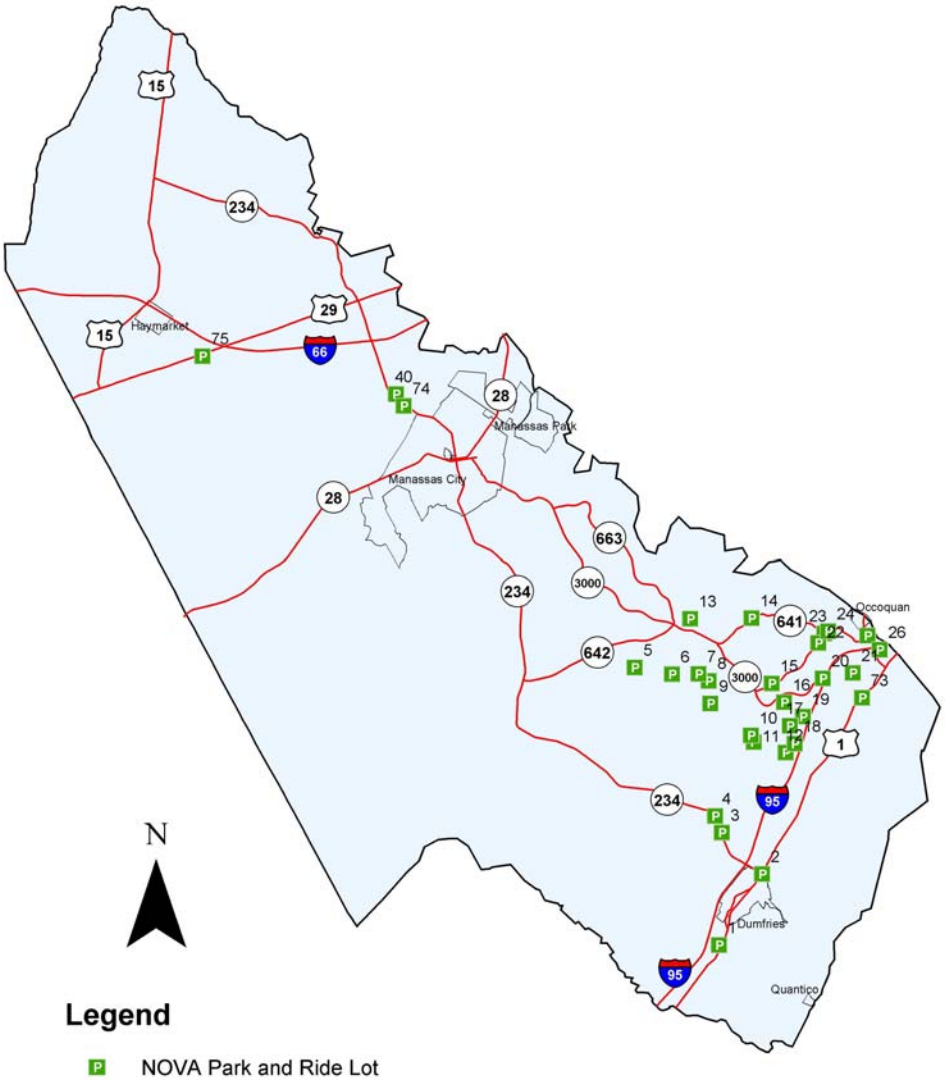


Figure 4. Loudoun County Park and Ride Lots

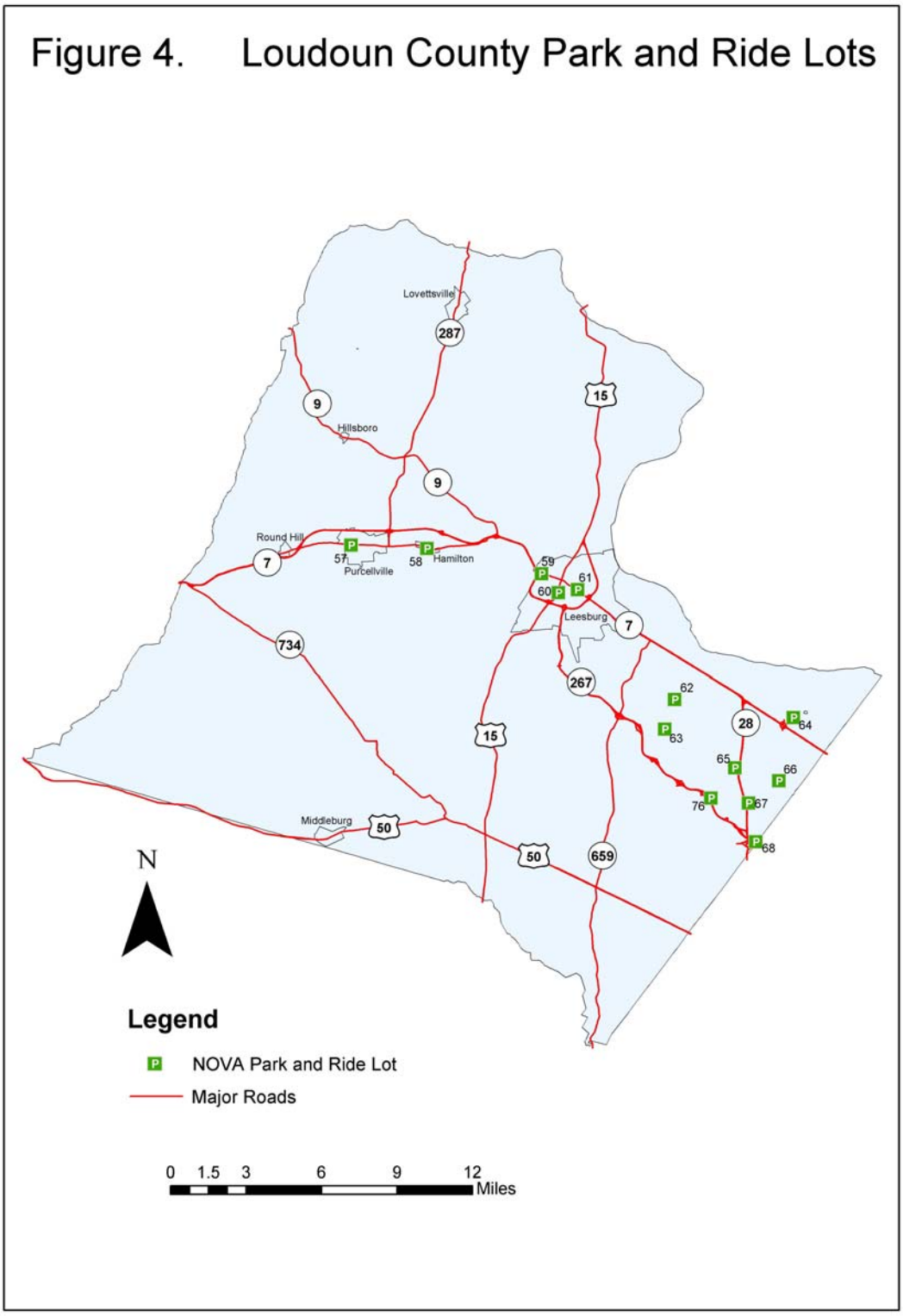


Table 1. Park and Ride Lot Data: Amenities

Lot #	Lot Name	Phone	Lights	Bus Stop	Bus Shelter	Bike Racks	Side-walks	Trail Access	HOV Access	Dist. to HOV	Curr. Open
01	Triangle	☐	☑	☑	☑	☐	☐	☐	☑	0 mi.	☑
02	US1/VA 234	☐	☑	☑	☑	☐	☐	☐	☑	0 mi.	☑
	Cars parked illegally.										
03	Brittany Neighborhood Park	☐	☐	☐	☐	☐	☐	☐	☐	1 mi.	☑
04	Montclair Commuter Lot	☐	☑	☑	☑	☐	☐	☐	☐	1 mi.	☑
05	Princedale at Northton	☐	☑	☑	☑	☐	☐	☐	☐	6 mi.	☑
06	Lindendale Commuter Lot	☐	☑	☑	☐	☐	☐	☐	☐	6 mi.	☑
07	Kirkdale @ Dale Blvd	☐	☐	☑	☐	☑	☐	☐	☐	5 mi.	☑
08	Hillendale Commuter Lot	☐	☑	☑	☐	☐	☐	☐	☐	5 mi.	☑
09	Dale City Commuter Lot	☑	☑	☑	☑	☑	☑	☐	☐	4 mi.	☑
10	Cloverdale Model Home Lot	☐	☐	☑	☐	☐	☐	☐	☐	2 mi.	☑
11	Cherrydale @ Dale Blvd	☐	☐	☑	☐	☐	☐	☐	☐	2 mi.	☑
12	K-Mart, Dale City	☐	☑	☑	☐	☐	☐	☐	☑	0 mi.	☑
13	Prince William County Stadium	☐	☑	☑	☐	☐	☐	☑	☐	6 mi.	☑
14	Old Bridge Festival Shopping Center	☐	☑	☑	☐	☐	☐	☐	☐	4 mi.	☑
15	Bethel United Methodist Church	☐	☐	☑	☐	☐	☐	☐	☐	3 mi.	☑
16	Christ Chapel	☐	☐	☐	☐	☐	☐	☐	☐	2 mi.	☑
17	Prince William Square	☐	☑	☑	☐	☐	☐	☐	☑	0 mi.	☑
18	PRTC Transit Center	☐	☑	☑	☑	☑	☑	☐	☑	0 mi.	☑
19	Potomac Mills Mall	☐	☑	☑	☐	☐	☐	☐	☑	0 mi.	☑
20	Prince William Parkway	☑	☑	☑	☑	☐	☐	☑	☑	0 mi.	☑
	Formerly "Horner Road Lot"/capacity does not include 325 spaces added in Summer 2001										
21	Church of the Brethren	☐	☑	☐	☐	☐	☐	☐	☐	1 mi.	☑
22	Harbor Drive	☐	☑	☑	☐	☐	☐	☐	☐	3 mi.	☑
23	Tackett's Mill Specialty Center	☐	☑	☑	☐	☐	☐	☐	☐	3 mi.	☑
24	Lake Ridge Commuter Lot	☑	☑	☑	☑	☑	☑	☐	☐	3 mi.	☑
25	Hechinger's - Old Bridge	☑	☑	☑	☑	☑	☑	☐	☑	0 mi.	☑
26	I-95/123 Loop Interchange	☑	☑	☑	☑	☑	☑	☐	☑	0 mi.	☑
27	South Run District Park	☐	☐	☑	☐	☐	☐	☑	☐	5 mi.	☑
28	Rolling Valley	☐	☐	☑	☑	☐	☑	☑	☐	5 mi.	☑
	Ownership: 50% VDOT/50% County										
29	Sydenstricker Road	☐	☑	☑	☑	☑	☑	☑	☐	3 mi.	☑
30	Springfield Methodist Church	☐	☐	☑	☐	☐	☐	☐	☑	0 mi.	☑

Lot #	Lot Name	Phone	Lights	Bus Stop	Bus Shelter	Bike Racks	Side-walks	Trail Access	HOV Access	Dist. to HOV	Curr. Open
31	Springfield Plaza	☐	☑	☑	☐	☐	☑	☐	☑	0 mi.	☑
32	American Legion Post	☐	☑	☑	☐	☐	☐	☐	☑	0 mi.	☑
33	Springfield Mall	☐	☑	☑	☐	☐	☐	☐	☑	0 mi.	☑
34	Springfield Mall - Macy's Parking Deck	☐	☑	☑	☐	☐	☐	☐	☑	0 mi.	☑
	Usage difficult to quantify due to mix of lot users.										
35	Parkwood Baptist Church	☐	☑	☐	☐	☐	☐	☐	☐	5 mi.	☑
36	Canterbury Woods Park	☐	☑	☑	☐	☐	☐	☐	☐	4 mi.	☑
37	Wakefield Chapel Recreation Center	☐	☑	☐	☐	☐	☐	☐	☐	3 mi.	☑
38	Jones Point Park	☑	☑	☐	☐	☐	☐	☐	☐	6 mi.	☐
	Lot closed - future uncertain due to W. Wilson Bridge reconstruction.										
39	Columbia Pike @ Four Mile Run	☐	☐	☑	☐	☐	☐	☑	☐	3 mi.	☑
40	Portsmouth Road Commuter Lot	☑	☑	☑	☑	☑	☑	☐	☐	2 mi.	☑
	Formerly "I-66/Rte 234 Lot"										
41	Stone Road - US 29	☑	☑	☑	☑	☑	☐	☐	☑	0 mi.	☑
42	Centreville United Methodist Church	☐	☑	☑	☑	☑	☐	☐	☐	2 mi.	☑
43	Stringfellow Road	☐	☑	☑	☑	☑	☑	☑	☑	0 mi.	☑
44	Sully Station	☐	☑	☑	☑	☑	☑	☐	☐	4 mi.	☑
45	Poplar Tree Park	☐	☑	☑	☑	☐	☐	☐	☐	2 mi.	☑
46	Greenbriar Park	☐	☑	☑	☐	☐	☐	☑	☐	2 mi.	☑
47	St. Paul's Church	☐	☑	☑	☐	☐	☐	☑	☐	2 mi.	☑
48	Fairfax County Government Center	☐	☑	☑	☐	☑	☐	☐	☑	0 mi.	☑
49	Fair Oaks Mall	☐	☐	☐	☐	☐	☐	☐	☑	0 mi.	☑
50	Kutner Park	☐	☐	☑	☐	☐	☐	☐	☐	1 mi.	☑
51	Truro Episcopal Church	☐	☐	☑	☐	☑	☐	☐	☐	2 mi.	☑
52	North Street Parking Lot	☐	☐	☑	☐	☐	☐	☐	☐	2 mi.	☑
53	Sipan	☐	☐	☑	☐	☐	☐	☐	☐	1 mi.	☑
54	K-Mart at Springfield Plaza	☐	☑	☑	☐	☐	☑	☐	☑	0 mi.	☑
55	Ballston Public Parking Garage	☐	☑	☑	☐	☐	☐	☐	☑	0 mi.	☑
56	North Quincy Street	☐	☐	☑	☐	☐	☐	☑	☑	0 mi.	☑
57	St. Andrew's Presbyterian Church	☐	☐	☑	☐	☐	☐	☐	☐	23 mi.	☑
	Usage data supplied by Loudoun County										
58	Hamilton Baptist Church	☐	☑	☑	☐	☐	☐	☑	☐	20 mi.	☑
	Usage data supplied by Loudoun County										
59	Holy Trinity Lutheran Church	☐	☐	☐	☐	☐	☐	☐	☐	15 mi.	☑

Lot #	Lot Name	Phone	Lights	Bus Stop	Bus Shelter	Bike Racks	Side-walks	Trail Access	HOV Access	Dist. to HOV	Curr. Open
60	Leesburg Virginia Village	☐	☑	☑	☐	☐	☐	☑	☐	13 mi.	☐
	Lot closed, replaced by Kohl's-Leesburg lot										
61	Leesburg K-Mart	☐	☑	☑	☐	☐	☐	☐	☐	13 mi.	☐
	Lot closed, replaced by Kohl's-Leesburg lot										
62	Ashburn Village Soccer Field	☐	☑	☐	☐	☐	☐	☐	☐	8 mi.	☑
63	Ashburn Farm	☐	☐	☐	☐	☐	☐	☐	☐	7 mi.	☑
64	Cascades Lot	☐	☑	☑	☑	☐	☐	☑	☐	8 mi.	☑
65	Wal-Mart	☐	☑	☑	☐	☐	☐	☐	☐	3 mi.	☐
	Lot closed, replaced by Dulles North lot										
66	Sterling Park Shopping Center	☐	☐	☐	☐	☐	☐	☐	☐	3 mi.	☑
	Formerly "Sterling Plaza Shopping Center"										
67	Holiday Inn - Sterling	☐	☐	☐	☐	☐	☐	☐	☐	2 mi.	☑
68	Innovation Avenue/CIT	☐	☐	☐	☐	☐	☐	☐	☐	1 mi.	☐
	On-street parking lot (curb lane)										
69	Herndon Monroe	☑	☑	☑	☑	☑	☑	☑	☑	0 mi.	☑
70	Reston South Commuter Lot	☑	☑	☑	☑	☑	☑	☑	☐	2 mi.	☑
71	Wiehle Avenue	☑	☑	☑	☑	☑	☐	☑	☑	0 mi.	☑
72	Reston East	☑	☑	☑	☑	☑	☑	☑	☑	0 mi.	☑
73	Marumsco Plaza	☐	☑	☑	☐	☐	☐	☐	☐	2 mi.	☑
74	Manassas Mall	☐	☐	☑	☐	☐	☐	☐	☐	3 mi.	☑
75	Virginia Gateway	☐	☐	☐	☐	☐	☐	☐	☐	1 mi.	☑
	Formerly "Linton Hall Lot"										
76	Dulles North	☐	☑	☑	☑	☑	☐	☐	☐	3 mi.	☑
	Replacement lot for Wal-Mart. Formerly known as W Regional Park and Ride Lot. Usage data supplied by Loudoun Co.										
77	Kohl's - Leesburg	☐	☑	☑	☐	☐	☐	☐	☐	13 mi.	☑
	Replacement lot for Virginia Village and Leesburg K-Mart. Usage data supplied by Loudoun County										
78	Nottoway Park	☐	☐	☑	☐	☐	☐	☐	☐	1 mi.	☑
	Usage data supplied by VDOT.										
79	Fair Lanes Bowling Center	☐	☑	☐	☐	☐	☐	☐	☐	1 mi.	☑
	Usage data supplied by VDOT.										

Table 2. Park and Ride Lot Data: Capacities and Usage

Lot #	Lot Name	Location	Corridor	Owner	Capacity	Usage	HC Capacity	HC Usage	Date Observed
01	Triangle	Prince William	I-95	VDOT	29	27	1	1	1/23/2001
02	US1/VA 234	Prince William	I-95	VDOT	278	315	7	4	1/23/2001
	Cars parked illegally.								
03	Brittany Neighborhood Park	Prince William	I-95	Private	85	13	0	0	1/23/2001
04	Montclair Commuter Lot	Prince William	I-95	VDOT	50	36	3	0	1/24/2001
05	Princedale at Northton	Prince William	I-95	Private	43	17	0	0	1/30/2001
06	Lindendale Commuter Lot	Prince William	I-95	VDOT	216	48	10	1	1/24/2001
07	Kirkdale @ Dale Blvd	Prince William	I-95	Private	41	8	0	0	1/24/2001
08	Hillendale Commuter Lot	Prince William	I-95	VDOT	248	137	8	0	1/24/2001
09	Dale City Commuter Lot	Prince William	I-95	VDOT	591	398	9	3	1/25/2001
10	Cloverdale Model Home Lot	Prince William	I-95	Private	46	10	0	0	1/30/2001
11	Cherrydale @ Dale Blvd	Prince William	I-95	Private	20	3	0	0	1/30/2001
12	K-Mart, Dale City	Prince William	I-95	Private	240	194	0	0	1/30/2001
13	Prince William County Stadium	Prince William	I-95	County	190	0	0	0	2/1/2001
14	Old Bridge Festival Shopping Center	Prince William	I-95	Private	56	59	0	0	2/1/2001
15	Bethel United Methodist Church	Prince William	I-95	Private	68	37	0	0	2/1/2001
16	Christ Chapel	Prince William	I-95	Private	300	0	0	0	2/1/2001
17	Prince William Square	Prince William	I-95	Private	45	121	0	0	2/1/2001
18	PRTC Transit Center	Prince William	I-95	County	200	173	9	2	1/30/2001
19	Potomac Mills Mall	Prince William	I-95	Private	936	895	8	5	1/31/2001
20	Prince William Parkway	Prince William	I-95	VDOT	730	739	14	14	2/6/2001
	Formerly "Horner Road Lot"/capacity does not include 325 spaces added in Summer 2001								
21	Church of the Brethren	Prince William	I-95	Private	29	2	0	0	2/7/2001
22	Harbor Drive	Prince William	I-95	VDOT	200	72	6	0	2/8/2001
23	Tackett's Mill Specialty Center	Prince William	I-95	Private	170	223	0	0	2/8/2001
24	Lake Ridge Commuter Lot	Prince William	I-95	VDOT	600	538	9	2	2/8/2001
25	Hechinger's - Old Bridge	Prince William	I-95	VDOT	580	593	12	5	2/7/2001
26	I-95/123 Loop Interchange	Prince William	I-95	VDOT	680	100	20	0	2/7/2001
27	South Run District Park	Fairfax	Ffx Co. Pkwy	County	52	0	4	0	2/13/2001
28	Rolling Valley	Fairfax	I-95	VDOT	664	521	17	2	2/13/2001
	Ownership: 50% VDOT/50% County								

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Lot #	Lot Name	Location	Corridor	Owner	Capacity	Usage	HC Capacity	HC Usage	Date Observed
29	Sydenstricker Road	Fairfax	Fairfax Co. Pkwy	VDOT	170	163	6	6	2/13/2001
30	Springfield Methodist Church	Fairfax	I-95	Private	57	58	0	0	2/13/2001
31	Springfield Plaza	Fairfax	I-95	Private	254	263	3	3	2/14/2001
32	American Legion Post	Fairfax	I-95	Private	100	110	0	0	2/14/2001
33	Springfield Mall	Fairfax	I-95	Private	80	116	0	0	2/14/2001
34	Springfield Mall - Macy's Parking Deck	Fairfax	I-95	Private	500	14	0	0	10/3/2001
	Usage difficult to quantify due to mix of lot users.								
35	Parkwood Baptist Church	Fairfax	I-95	Private	18	9	0	0	2/21/2001
36	Canterbury Woods Park	Fairfax	I-95	County	35	32	0	0	2/21/2001
37	Wakefield Chapel Recreation Center	Fairfax	I-95	County	50	31	0	0	3/21/2001
38	Jones Point Park	City of Alexandria	Rte 1	City	194	45	0	0	2/15/2001
	Lot closed - future uncertain due to W. Wilson Bridge reconstruction.								
39	Columbia Pike @ Four Mile Run	Arlington	I-95	County	24	9	0	0	2/15/2001
40	Portsmouth Road Commuter Lot	Prince William	I-66	VDOT	605	72	12	1	2/22/2001
	Formerly "I-66/Rte 234 Lot"								
41	Stone Road - US 29	Fairfax	I-66	County	372	312	8	5	2/22/2001
42	Centreville United Methodist Church	Fairfax	I-66	VDOT	144	126	6	2	2/22/2001
43	Stringfellow Road	Fairfax	I-66	VDOT	385	91	8	0	2/27/2001
44	Sully Station	Fairfax	I-66	Private	139	5	3	0	2/27/2001
45	Poplar Tree Park	Fairfax	I-66	County	279	3	7	0	2/27/2001
46	Greenbriar Park	Fairfax	I-66	County	60	6	4	0	2/27/2001
47	St. Paul's Church	Fairfax	I-66	Private	109	25	5	0	2/27/2001
48	Fairfax County Government Center	Fairfax	I-66	County	170	63	8	0	2/27/2001
49	Fair Oaks Mall	Fairfax	I-66	Private	150	19	0	0	3/21/2001
50	Kutner Park	City of Fairfax	I-66	City	15	0	0	0	3/21/2001
51	Truro Episcopal Church	City of Fairfax	I-66	Private	46	3	0	0	2/28/2001
52	North Street Parking Lot	City of Fairfax	I-66	City	22	11	0	0	3/21/2001
53	Sipan	City of Fairfax	I-66	Private	46	0	0	0	3/21/2001
54	K-Mart at Springfield Plaza	Fairfax	I-95	Private	50	75	0	0	2/27/2001
55	Ballston Public Parking Garage	Arlington	I-66	County	500	98	0	0	6/27/2001
56	North Quincy Street	Arlington	I-66	County	356	29	0	0	3/21/2001

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Lot #	Lot Name	Location	Corridor	Owner	Capacity	Usage	HC Capacity	HC Usage	Date Observed
57	St. Andrew's Presbyterian Church	Loudoun	Rte 7	Private	35	23	0	0	1/9/2002
	Usage data supplied by Loudoun County								
58	Hamilton Baptist Church	Loudoun	Rte 7	Private	41	32	0	0	1/9/2002
	Usage data supplied by Loudoun County								
59	Holy Trinity Lutheran Church	Town of Leesburg	Rte 7	Private	50	13	0	0	3/21/2001
60	Leesburg Virginia Village	Town of Leesburg	Rte 7	Private	45	18	0	0	3/21/2001
	Lot closed, replaced by Kohl's-Leesburg lot								
61	Leesburg K-Mart	Town of Leesburg	Rte 7	Private	45	72	0	0	3/21/2001
	Lot closed, replaced by Kohl's-Leesburg lot								
62	Ashburn Village Soccer Field	Loudoun	Dulles	Private	40	0	0	0	3/21/2001
63	Ashburn Farm	Loudoun	Dulles	Private	20	6	0	0	3/21/2001
64	Cascades Lot	Loudoun	Rte 7	County	55	0	0	0	3/1/2001
65	Wal-Mart	Loudoun	Dulles	Private	107	131	0	0	3/22/2001
	Lot closed, replaced by Dulles North lot								
66	Sterling Park Shopping Center	Loudoun	Dulles	Private	45	8	0	0	3/22/2001
	Formerly "Sterling Plaza Shopping Center"								
67	Holiday Inn - Sterling	Loudoun	Dulles	VDOT	48	14	0	0	3/22/2001
68	Innovation Avenue/CIT	Loudoun	Dulles	VDOT	75	0	0	0	3/22/2001
	On-street parking lot (curb lane)								
69	Herndon Monroe	Fairfax	Dulles	County	1778	804	34	8	3/6/2001
70	Reston South Commuter Lot	Fairfax	Dulles	County	412	159	10	0	3/7/2001
71	Wiehle Avenue	Fairfax	Dulles	VDOT	368	59	7	0	3/7/2001
72	Reston East	Fairfax	Dulles	County	820	761	20	9	3/7/2001
73	Marumsco Plaza	Prince William	Rte 1	Private	200	0	0	0	2/22/2001
74	Manassas Mall	Prince William	I-66	Private	217	24	0	0	3/21/2001
75	Virginia Gateway	Prince William	I-66	Private	125	34	0	0	2/22/2001
	Formerly "Linton Hall Lot"								
76	Dulles North	Loudoun	Dulles	VDOT	750	240	16	0	1/9/2002
	Replacement lot for Wal-Mart. Formerly known as W Regional Park and Ride Lot. Usage data supplied by Loudoun County								
77	Kohl's - Leesburg	Town of Leesburg	Rte 7	Private	150	196	0	0	1/9/2002
	Replacement lot for Virginia Village and Leesburg K-Mart. Usage data supplied by Loudoun County								
78	Nottoway Park	Fairfax	I-66	County	14	8	0	0	1/16/2002
	Usage data supplied by VDOT.								
79	Fair Lanes Bowling Center	Fairfax	I-66	Private	35	6	0	0	1/16/2002
	Usage data supplied by VDOT.								

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Table 3 provides a summary of 2001 lot utilization by corridor, which was used for this study. Although this table shows available lot capacity in all corridors, there are a number of lots that are currently operating over-capacity (i.e., vehicles parked illegally or beyond established spaces in shared lots) due to their locations close to HOV facilities and available transit service. Conversely, there are lots that are underutilized in each corridor. Critical factors that relate to the relative utilization and desirability of park and ride lots throughout the District were identified through statistical analysis for use in identification of potential new lot locations. These factors are discussed in Section 4 of this report. Appendix A contains 2002 lot utilization data collected by VDOT.

Table 4 provides a summary of lot utilization by jurisdiction. Table 5 presents capacity and utilization totals for each jurisdiction. Utilization is generally higher in the jurisdictions farther from the DC core area, with demand exceeding supply in the Town of Leesburg.

License Plates of Virginia-Registered Vehicles

The license plate numbers of all Virginia-registered vehicles in the seventy-nine lots were recorded and entered into a database. The registration addresses for each vehicle were then obtained from the Department of Motor Vehicles and geocoded to identify the home locations of users of each lot. Approximately 93% of all vehicles observed in the seventy-nine lots had Virginia license plates that were able to be geocoded. This information provided a critical input to the future park and ride lot demand methodology, which is described in the following section of this report.

2.2 Inputs to VDOT Web Site

One of the objectives of the baseline assessment was to provide information that could be communicated to the public to support VDOT's marketing and promotion of carpool, vanpool and transit use in the major HOV corridors. Following completion of the data collection program, separate web pages were created for each park and ride lot for integration into VDOT's web site. Each of these pages contained the following information:

- Lot capacity and utilization data
- Lot Amenities
- Picture of lot
- Map showing lot location

VDOT will incorporate these pages into its official web site along with regional maps so that interested commuters can identify convenient lots. VDOT will also be able to update this information as new lots are constructed, expanded or improved.

Table 3. 2001 Park and Ride Lot Utilization by Corridor

Lot #	Lot Name	Capacity	Usage	Percent Utilized	Owner
Dulles Corridor					
62	Ashburn Village Soccer Field	40	0	0.0%	Private
63	Ashburn Farm	20	6	30.0%	Private
66	Sterling Park Shopping Center	45	8	17.8%	Private
67	Holiday Inn - Sterling	48	14	29.2%	VDOT
69	Herndon Monroe	1778	804	45.2%	County
70	Reston South Commuter Lot	412	159	38.6%	County
71	Wiehle Avenue	368	59	16.0%	VDOT
72	Reston East	820	761	92.8%	County
76	Dulles North	750	240	32.0%	VDOT
Total For Dulles Corridor		4281	2051	47.9%	
Fairfax Co. Pkwy Corridor					
27	South Run District Park	52	0	0.0%	County
29	Sydenstricker Road	170	163	95.9%	VDOT
Total For Fairfax Co. Pkwy Corridor		222	163	73.4%	
I-66 Corridor					
40	Portsmouth Road Commuter Lot	605	72	11.9%	VDOT
41	Stone Road - US 29	372	312	83.9%	County
42	Centreville United Methodist Church	144	126	87.5%	VDOT
43	Stringfellow Road	385	91	23.6%	VDOT
44	Sully Station	139	5	3.6%	Private
45	Poplar Tree Park	279	3	1.1%	County
46	Greenbriar Park	60	6	10.0%	County
47	St. Paul's Church	109	25	22.9%	Private
48	Fairfax County Government Center	170	63	37.1%	County
49	Fair Oaks Mall	150	19	12.7%	Private
50	Kutner Park	15	0	0.0%	City
51	Truro Episcopal Church	46	3	6.5%	Private

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Lot #	Lot Name	Capacity	Usage	Percent Utilized	Owner
52	North Street Parking Lot	22	11	50.0%	City
53	Sipan	46	0	0.0%	Private
55	Ballston Public Parking Garage	500	98	19.6%	County
56	North Quincy Street	356	29	8.1%	County
74	Manassas Mall	217	24	11.1%	Private
75	Virginia Gateway	125	34	27.2%	Private
78	Nottoway Park	14	8	57.1%	County
79	Fair Lanes Bowling Center	35	6	17.1%	Private
Total For I-66 Corridor		3789	935	24.7%	
I-95 Corridor					
01	Triangle	29	27	93.1%	VDOT
02	US1/VA 234	278	315	113.3%	VDOT
03	Brittany Neighborhood Park	85	13	15.3%	Private
04	Montclair Commuter Lot	50	36	72.0%	VDOT
05	Princedale at Northton	43	17	39.5%	Private
06	Lindendale Commuter Lot	216	48	22.2%	VDOT
07	Kirkdale @ Dale Blvd	41	8	19.5%	Private
08	Hillendale Commuter Lot	248	137	55.2%	VDOT
09	Dale City Commuter Lot	591	398	67.3%	VDOT
10	Cloverdale Model Home Lot	46	10	21.7%	Private
11	Cherrydale @ Dale Blvd	20	3	15.0%	Private
12	K-Mart, Dale City	240	194	80.8%	Private
13	Prince William County Stadium	190	0	0.0%	County
14	Old Bridge Festival Shopping Center	56	59	105.4%	Private
15	Bethel United Methodist Church	68	37	54.4%	Private
16	Christ Chapel	300	0	0.0%	Private
17	Prince William Square	45	121	268.9%	Private
18	PRTC Transit Center	200	173	86.5%	County
19	Potomac Mills Mall	936	895	95.6%	Private
20	Prince William Parkway	730	739	101.2%	VDOT
21	Church of the Brethren	29	2	6.9%	Private

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Lot #	Lot Name	Capacity	Usage	Percent Utilized	Owner
22	Harbor Drive	200	72	36.0%	VDOT
23	Tackett's Mill Specialty Center	170	223	131.2%	Private
24	Lake Ridge Commuter Lot	600	538	89.7%	VDOT
25	Hechinger's - Old Bridge	580	593	102.2%	VDOT
26	I-95/123 Loop Interchange	680	100	14.7%	VDOT
28	Rolling Valley	664	521	78.5%	VDOT
30	Springfield Methodist Church	57	58	101.8%	Private
31	Springfield Plaza	254	263	103.5%	Private
32	American Legion Post	100	110	110.0%	Private
33	Springfield Mall	80	116	145.0%	Private
34	Springfield Mall - Macy's Parking	500	14	2.8%	Private
35	Parkwood Baptist Church	18	9	50.0%	Private
36	Canterbury Woods Park	35	32	91.4%	County
37	Wakefield Chapel Recreation Center	50	31	62.0%	County
39	Columbia Pike @ Four Mile Run	24	9	37.5%	County
54	K-Mart at Springfield Plaza	50	75	150.0%	Private
Total For I-95 Corridor		8503	5996	70.5%	
Rte 1 Corridor					
73	Marumsco Plaza	200	0	0.0%	Private
Total For Rte 1 Corridor		200	0	0.0%	
Rte 7 Corridor					
57	St. Andrew's Presbyterian Church	35	23	65.7%	Private
58	Hamilton Baptist Church	41	32	78.0%	Private
59	Holy Trinity Lutheran Church	50	13	26.0%	Private
64	Cascades Lot	55	0	0.0%	County
77	Kohl's - Leesburg	150	196	130.7%	Private
Total For Rte 7 Corridor		331	264	79.8%	

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Table 4. 2001 Park and Ride Lot Utilization by Jurisdiction

Lot #	Lot Name	Capacity	Usage	Percent Utilized	Owner
Arlington					
39	Columbia Pike @ Four Mile Run	24	9	37.5%	County
55	Ballston Public Parking Garage	500	98	19.6%	County
56	North Quincy Street	356	29	8.1%	County
Total For Arlington		880	136	15.5%	
City of Fairfax					
50	Kutner Park	15	0	0.0%	City
51	Truro Episcopal Church	46	3	6.5%	Private
52	North Street Parking Lot	22	11	50.0%	City
53	Sipan	46	0	0.0%	Private
Total For City of Fairfax		129	14	10.9%	
Fairfax					
27	South Run District Park	52	0	0.0%	County
28	Rolling Valley	664	521	78.5%	VDOT
29	Sydenstricker Road	170	163	95.9%	VDOT
30	Springfield Methodist Church	57	58	101.8%	Private
31	Springfield Plaza	254	263	103.5%	Private
32	American Legion Post	100	110	110.0%	Private
33	Springfield Mall	80	116	145.0%	Private
34	Springfield Mall - Macy's Parking	500	14	2.8%	Private
35	Parkwood Baptist Church	18	9	50.0%	Private
36	Canterbury Woods Park	35	32	91.4%	County
37	Wakefield Chapel Recreation Center	50	31	62.0%	County
41	Stone Road - US 29	372	312	83.9%	County
42	Centreville United Methodist Church	144	126	87.5%	VDOT
43	Stringfellow Road	385	91	23.6%	VDOT
44	Sully Station	139	5	3.6%	Private
45	Poplar Tree Park	279	3	1.1%	County

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Lot #	Lot Name	Capacity	Usage	Percent Utilized	Owner
46	Greenbriar Park	60	6	10.0%	County
47	St. Paul's Church	109	25	22.9%	Private
48	Fairfax County Government Center	170	63	37.1%	County
49	Fair Oaks Mall	150	19	12.7%	Private
54	K-Mart at Springfield Plaza	50	75	150.0%	Private
69	Herndon Monroe	1778	804	45.2%	County
70	Reston South Commuter Lot	412	159	38.6%	County
71	Wiehle Avenue	368	59	16.0%	VDOT
72	Reston East	820	761	92.8%	County
78	Nottoway Park	14	8	57.1%	County
79	Fair Lanes Bowling Center	35	6	17.1%	Private
Total For Fairfax		7265	3839	52.8%	
Loudoun					
57	St. Andrew's Presbyterian Church	35	23	65.7%	Private
58	Hamilton Baptist Church	41	32	78.0%	Private
59	Holy Trinity Lutheran Church	50	13	26.0%	Private
62	Ashburn Village Soccer Field	40	0	0.0%	Private
63	Ashburn Farm	20	6	30.0%	Private
64	Cascades Lot	55	0	0.0%	County
66	Sterling Park Shopping Center	45	8	17.8%	Private
67	Holiday Inn - Sterling	48	14	29.2%	VDOT
76	Dulles North	750	240	32.0%	VDOT
77	Kohl's - Leesburg	150	196	130.7%	Private
Total For Loudoun		1234	532	43.1%	
Prince William					
01	Triangle	29	27	93.1%	VDOT
02	US1/VA 234	278	315	113.3%	VDOT
03	Brittany Neighborhood Park	85	13	15.3%	Private
04	Montclair Commuter Lot	50	36	72.0%	VDOT
05	Princedale at Northton	43	17	39.5%	Private

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Lot #	Lot Name	Capacity	Usage	Percent Utilized	Owner
06	Lindendale Commuter Lot	216	48	22.2%	VDOT
07	Kirkdale @ Dale Blvd	41	8	19.5%	Private
08	Hillendale Commuter Lot	248	137	55.2%	VDOT
09	Dale City Commuter Lot	591	398	67.3%	VDOT
10	Cloverdale Model Home Lot	46	10	21.7%	Private
11	Cherrydale @ Dale Blvd	20	3	15.0%	Private
12	K-Mart, Dale City	240	194	80.8%	Private
13	Prince William County Stadium	190	0	0.0%	County
14	Old Bridge Festival Shopping Center	56	59	105.4%	Private
15	Bethel United Methodist Church	68	37	54.4%	Private
16	Christ Chapel	300	0	0.0%	Private
17	Prince William Square	45	121	268.9%	Private
18	PRTC Transit Center	200	173	86.5%	County
19	Potomac Mills Mall	936	895	95.6%	Private
20	Prince William Parkway	730	739	101.2%	VDOT
21	Church of the Brethren	29	2	6.9%	Private
22	Harbor Drive	200	72	36.0%	VDOT
23	Tackett's Mill Specialty Center	170	223	131.2%	Private
24	Lake Ridge Commuter Lot	600	538	89.7%	VDOT
25	Hechinger's - Old Bridge	580	593	102.2%	VDOT
26	I-95/123 Loop Interchange	680	100	14.7%	VDOT
40	Portsmouth Road Commuter Lot	605	72	11.9%	VDOT
73	Marumsco Plaza	200	0	0.0%	Private
74	Manassas Mall	217	24	11.1%	Private
75	Virginia Gateway	125	34	27.2%	Private
Total For Prince William		7818	4888	62.5%	

Note: Lot capacities shown in table are based on field counts and may differ slightly from previously documented capacity data.

Table 5. Summary of 2001 Jurisdiction Park and Ride Lot Capacity and Percent Utilization

Jurisdiction	Total P&R Lot Capacity	% P&R Lot Utilization
Arlington County	880	15.5%
City of Fairfax	129	10.9%
Fairfax County	7,265	52.8%
Loudoun County	1,234	43.1%
Prince William County	7,818	62.5%
Total	17,326	54%

3. Future Park and Ride Lot Demand

3.0 Future Park and Ride Lot Demand

A key component of this study was to project future demand for park and ride facilities located within the Northern Virginia District. The demand methodology and subsequent needs analysis focused only on those park and ride lots oriented to the major HOV corridors and did not examine other lots, such as those at Metrorail and VRE stations. In addition, future park and ride demand for the Dulles corridor between SR 659 and the Capital Beltway was not examined since this had been the subject of detailed analyses as part of the Dulles Corridor Transportation Study (*Dulles Corridor Transportation Study, Virginia Department of Rail and Public Transportation, 1997*).

3.1 Demand Methodology

The methodology described below was used to develop short-range (2005), intermediate-range (2010) and long-range (2020) projections of demand for park and ride facilities. The demand analysis focused on five of the commuter corridors and the roads that feed into them within the Northern Virginia District that provide access to HOV facilities:

1. I-95 - Prince William/Stafford County Line to Capital Beltway
2. US 1 - Prince William/Stafford County Line to Capital Beltway
3. I-66 - Prince William/Fauquier County Line to Capital Beltway
4. VA 7/Greenway/Dulles Toll Road – Loudoun/Clarke County Line to Capital Beltway (Dulles Toll Road – VA 28 to Capital Beltway, baseline assessment only)
5. Fairfax County Parkway – US 1 to VA 7

Each of the five corridors was subdivided into subareas for the purposes of this analysis, which enabled the methodology to be sensitive to separate areas within each corridor that can be expected to demonstrate different demand characteristics. The subareas were defined based on GIS plots of the existing park and ride lot user origins for each lot in each corridor.

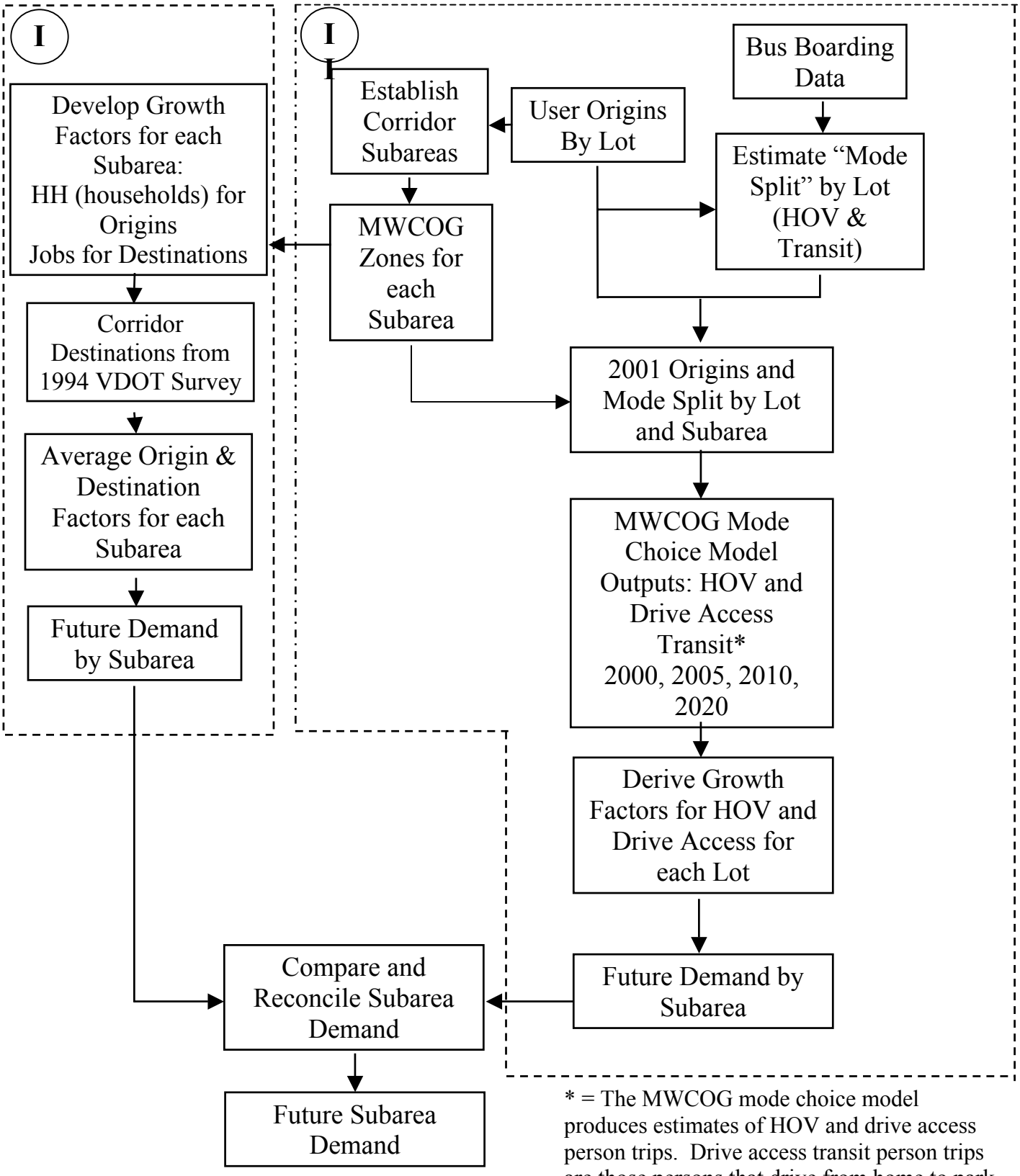
Throughout the remainder of this section of the report, there will be references to corridors and subareas. Corridors are those commuting corridors listed above. Subareas are subsets of each corridor.

The flow chart in Figure 5 shows the methodology that was applied. As shown, two separate procedures, labeled as I and II, were applied independently with the results compared and reconciled to produce a final set of demand projections. Each of the two procedures is described in detail below. The reconciled projections were used to identify preferred areas for new park and ride lot capacity to serve future projected demand.

Procedure I

This procedure was based on the one developed and utilized by the Transportation Planning Section of the Northern Virginia District in its 1997 analysis of the I-95/395 corridor (*I-95 Corridor 2010 Park-and-Ride Lot Demand Forecasts, June 1997*). While some details were modified for this analysis, the basis of the procedure remained the same, which is that future park and ride lot demand is a function of current demand by subarea and regional household

Figure 5. Park and Ride Lot Demand Methodology



* = The MWCOG mode choice model produces estimates of HOV and drive access person trips. Drive access transit person trips are those persons that drive from home to park and ride lots or transit stations to access transit services.

and employment growth. This procedure was intended to produce order of magnitude demand estimates for each subarea.

Separate growth factors for origins and destinations were developed for each corridor subarea for each target year. Origin growth factors were based on projected growth in households of zones within each subarea and destination growth factors were based on projected growth in employment in the regional core (DC and Arlington) and the Virginia non-core (Fairfax County and Alexandria) destination areas. The employment growth rates were weighted to reflect the proportion of trips to the core vs. non-core areas for each subarea based on data from a previous 1994 VDOT survey of park and ride lot users. For those corridors and subareas for which previous survey data was not available, weights were based on other O-D studies conducted in Northern Virginia for VDOT by BMI in 1999 and professional judgment. Future household and employment growth was based on Metropolitan Washington COG Cooperative Land Use Forecasts Round 6.2.

The final employment growth factors for each subarea were then averaged with the household growth factors to derive an overall growth factor that was applied to existing park and ride lot demand in each subarea to generate demand projections for each target year.

Procedure II

This procedure produced demand estimates at the subarea level and was formulated to be sensitive to future changes in HOV facilities, transit services and levels of highway congestion in each corridor. This procedure used the regional MWCOG Version 1 travel demand model's mode choice component to develop projections of park and ride lot demand. The MWCOG mode choice model produces projections of home-to-work person trips by mode. Much like Procedure I, this procedure was used to derive growth factors to apply to existing utilization to project future demand. The growth factors were derived from growth in HOV and drive access transit trips resulting from the mode choice model, which are based on MWCOG Cooperative Land Use Forecasts Round 6.2 and the Constrained Long Range Transportation Plan (CLRP) and FY2000-2005 Transportation Improvement Program (TIP). Selected major transportation system improvements in the 2000 CLRP assumed for the various target years (i.e., "open to traffic" years) of this analysis included the following:

1. I-95, widen to 8 lanes from Newington to VA 123, 2005
2. I-95, LOV access at Franconia-Springfield Parkway to and from the west, 2010
3. I-495, widen to 10 lanes, Dulles Toll Road to American Legion Bridge, 2008
4. Dulles Greenway, widen to 6 lanes, VA 772 to VA 28, 2000, 2010
5. Fairfax County Parkway, upgrade to Route Type 1 from Fullerton Road to Franconia-Springfield Parkway, 2005
6. Metrorail/VRE Station at Potomac Yards, 2010
7. I-395 HOV, restripe to 3 lanes, 2010
8. Fairfax County Parkway/Franconia-Springfield Parkway HOV, 2010
9. I-95 HOV, extend to Stafford County Line , 2005, and restripe to 3 lanes from Quantico Creek to I-395, 2010
10. I-495 HOV from I-495/395 interchange to American Legion Bridge, 2006-2008
11. I-395, add HOV access to and from the south at Seminary Road, 2010

12. I-66 HOV from VA 234 to US 15, 2003-2005
13. Cherry Hill VRE station access road, 2010
14. Dulles Fixed Guideway transit, bus, BRT, Rail, 2001-2010
15. US 1 HOV from VA 235 to the south city line of Alexandria, 2025
16. I-95/395 Transit Service Enhancements from Stafford County Line to Potomac River

Although all transportation system improvements in the CLRP were assumed for this analysis, the specific projects noted above have the potential to affect park and ride lot demand in the Northern Virginia District.

The first step in this procedure was to determine the subareas in each corridor to be used for this procedure and Procedure I. As part of the Task 1 baseline assessment, BMI collected Virginia license plate numbers of vehicles observed in all of the surveyed lots. This data was then sent to the Virginia Department of Motor Vehicles to obtain the registration addresses, which were geocoded and plotted using GIS. This data allowed the study team to identify the market areas for each lot and corridor, as well as to determine appropriate subarea boundaries within each corridor.

Figure 6 shows the resulting subareas, as well as the geocoded vehicle registration data color-coded by corridor. Eighteen subareas were identified. Each "dot" in Figure 6 represents a geocoded registration address of vehicles observed in the park and ride lots during the baseline assessment. The analysis subareas were developed based on concentrations of park and ride lot users.

This procedure was also formulated to be sensitive to the reason people are using particular park and ride lots; that is, for ridesharing or to access bus transit service. BMI compiled data from the local jurisdictions on the number of persons boarding buses at some of the lots within their jurisdiction to help determine the mode split (i.e., proportion of HOV vs. bus riders) at each lot. In addition, BMI collected bus boarding data at six additional park and ride lots to supplement the data obtained from the local jurisdictions. Appendix B contains the bus boarding data.

For each subarea, an approximation was made of the MWCOG zones that most closely correspond to that subarea, as indicated by the GIS plots for each lot. Outputs of the mode choice component of the MWCOG regional travel demand model were then used to generate two separate growth factors for each subarea: 1) HOV and 2) drive access transit. Drive access transit trips are person trips that drive in a vehicle from their home to either a park and ride lot or to a transit station with parking to access transit services. These growth factors were applied to the respective number of each type of user for each subarea. The proportion of transit vs. HOV users for each subarea was based on corridor estimates developed from the bus boarding data. Growth in slugging activity was accounted for using the HOV growth factor. Future demand for the subareas was then aggregated and compared to the subarea demand levels projected under Procedure I.

At this point, these preliminary demand projections were reviewed with the study team. This review showed that the Procedure II projections were significantly higher than the Procedure I

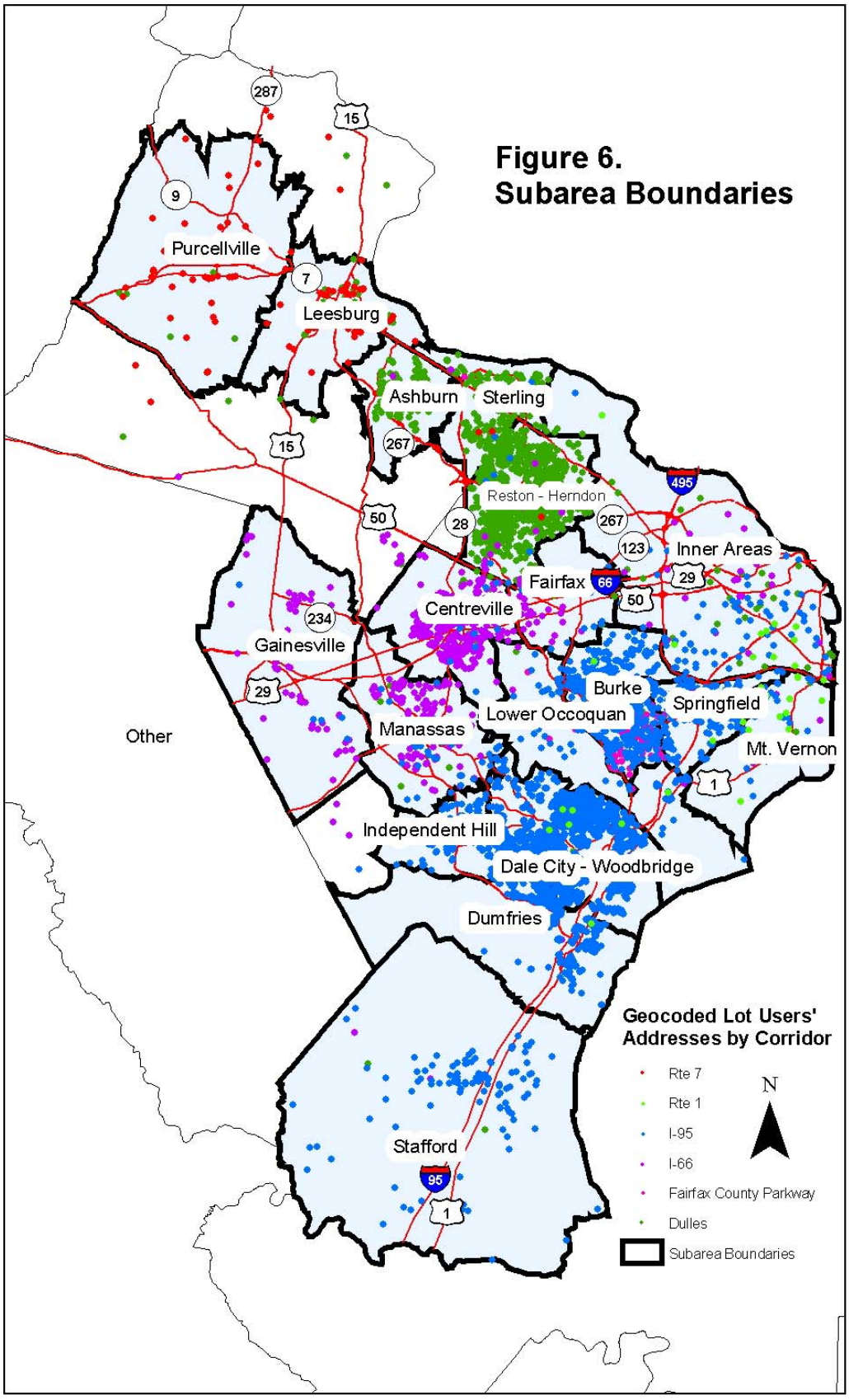


Figure 6.
Subarea Boundaries
287
15
9
Purcellville
7
Leesburg
Ashburn
Sterling
15
267
495
Reston - Herndon
50
28
267
123
Inner Areas
Fairfax
66
29
50
Centreville
234
Gainesville
29
Burke
Springfield
Lower Occoquan
Other
Manassas
Mt. Vernon
1
Independent Hill
Dale City - Woodbridge
Dumfries
Stafford
95
1
Geocoded Lot Users' Addresses by Corridor
Rte 7
Rte 1
I-95
I-66
Fairfax County Parkway
Dulles
Subarea Boundaries
N

projections in all cases, thereby establishing high and low ends of a range of demand levels. It was decided at that point to average the projections from both procedures for each subarea to estimate future park and ride lot demand from each subarea.

This averaging procedure was applied for all subareas except the Leesburg and Purcellville subareas, for which the Procedure I demand projections were used. The reason for this was that future park and ride lot demand from these subareas, as estimated using the Procedure II methodology, was heavily influenced by the planned major transit improvements in the Dulles corridor. Since the focus of this study is on free park and ride lots, as opposed to transit station lots typically requiring a parking fee, it was felt that the average of demand growth factors from the two procedures was still too high for projecting demand for free park and ride lot spaces. In addition, absent any changes to commuter bus service now operating out of these areas, it was determined that a lower demand estimate (i.e., Procedure I level) would be appropriate.

3.2 Future Park and Ride Lot Demand

Table 6 shows the final future park and ride lot demand forecasts by subarea of origin. As shown in Table 6, overall Northern Virginia District park and ride lot demand is projected to increase by approximately 50% by the year 2020. The 2020 forecasts show a growth in demand of approximately 45% in the I-66 and I-95 corridors. The Route 7 corridor shows a higher percentage growth due to expected growth in population and households. Demand projections for the Dulles corridor were not developed as part of this study due to the ongoing Dulles Corridor Rapid Transit Project (DCRTP) EIS efforts being led by the Virginia Department of Rail and Public Transportation.

Table 6. Future Park and Ride Lot Demand by Subarea of Origin

Subarea Name	Current Demand	2005 Demand	2005 % Growth	2010 Demand	2010 % Growth	2020 Demand	2020 % Growth
Purcellville	82	94		110		151	
Leesburg	160	317		527		743	
Rte. 7 Corridor Subtotal	242	411	*70%*	637	*163%*	894	*269%*
Centreville	530	577		613		711	
Fairfax	66	75		81		97	
Gainesville	71	89		106		171	
Manassas	193	209		222		265	
I-66 Corridor Subtotal	860	950	*10%*	1022	*19%*	1244	*45%*
Lower Occoquan	108	116		123		134	
Burke	944	1046		1138		1248	
Springfield	315	383		439		524	
Independent Hill	212	236		253		302	
Dale City – Woodbridge	3523	4057		4504		4919	
Stafford	157	195		228		257	
Dumfries	777	970		1125		1296	
I-95 & FCP Corridor Subtotal	6036	7003	*16%*	7810	*29%*	8680	*44%*
Inner Areas: Great Falls / Arlington	183	211	*15%*	236	*29%*	275	*50%*
Mt. Vernon	68	91	*34%*	111	*63%*	135	*99%*
Other*	927	983	*6%*	1001	*8%*	1042	*12%*
Totals (excluding Dulles corridor)	8316	9649	*16%*	10817	*30%*	12270	*48%*

* areas in Virginia outside of the eighteen subareas that were identified for this study.

4. Identification of Park and Ride Lot Needs

4.0 Identification of Park and Ride Lot Needs

This section of the report describes the process used to identify areas that require additional park and ride lot capacity, including the results of a statistical analysis, needs analysis and identification of subareas in which additional park and ride lot capacity is, or will be, needed.

4.1 Statistical Analysis

In order to identify future park and ride lot capacity needs in each subarea, potential demand for park and ride spaces in each subarea was compared to existing and programmed parking supply in each subarea, which is described in Section 4.2. However, since the baseline assessment found that there are park and ride lots in each subarea that have little or no usage, a statistical analysis of lot attributes and usage was conducted to determine which lot attributes had the strongest correlation to lot usage. The results of this analysis provided useful information toward an understanding of why particular lots were underutilized and where potential new lots should be located.

BMI obtained data not only on the capacity and usage of each existing park and ride lot, but also a number of other attributes as well. These included:

- Ownership of the lot,
- Presence of lighting,
- Presence of a public phone,
- Presence of bus transit service,
- Presence of bus shelters,
- Presence of a connection to a bike route,
- Presence of bike racks, bike lockers, or other amenities,
- Presence of connecting sidewalks, and
- Presence of direct HOV access (i.e., within one-quarter mile).

All of these attributes were subjected to statistical testing to determine if there was a correlation between the attribute and the volume-capacity ratio (i.e., utilization) for the lot. The statistical method used was a parametric estimator of the Wilcoxon Rank-Sum test, for α=0.05. The parameter α is a measure of the probability of a false correlation the analyst is willing to accept.

The results of the statistical tests showed that only three attributes met the criteria for finding a correlation:

- Presence of lighting,
- Presence of bus transit service, and
- Direct HOV access.

The presence of each of these attributes, taken separately, has a positive correlation with the volume-capacity ratio. None of the other attributes showed a correlation. Additional tests were performed in an attempt to prove or disprove the independence of these three attributes.

It was found that where transit service is present, there is an independent correlation between lighting and the volume-capacity ratio, but in areas without transit or HOV access, there is no correlation. The results for the tests between transit and HOV were suggestive of independence, but this could not be definitively proven or disproven. With the results of the statistical tests, two essential attributes required for a proposed park and ride lot to be effective were identified:

- The park and ride lot should have either direct access to the HOV system or regular bus service, and
- The park and ride lot should be lighted.

4.2 Needs Analysis

In addition to understanding the attributes that encourage park and ride lot utilization, subarea demand projections were examined and compared with the existing supply to help identify subareas where additional park and ride lot capacity may be needed.

In order to develop estimates of where additional park and ride lot capacity will be needed, the demand estimates from Table 6 were used in conjunction with current demand patterns as identified from the geocoding of current users. The demand estimates by subarea of trip origin in Table 6 were assigned to park and ride lot destinations by subarea based on current demand patterns.

As an example, consider the Dale City-Woodbridge area. Park and ride lot user demand from this subarea is projected to be 4,057 in 2005, as shown in Table 6. However, from the geocoded user data that was collected, it is known that not all park and rider lot users that live in this subarea use a park and ride lot in this subarea. Similarly, not all vehicles observed parked in this subarea originated in this subarea. This is why the estimated 2005 demand for park and ride lot origins (i.e., 4,057 from Table 6) does not equal the projected 2005 demand for spaces in the Dale City-Woodbridge subarea of 5,518 shown in Table 7.

Table 7 provides a summary of future park and ride lot demand versus supply by subarea. The supply figures shown in Table 7 include both existing supply and funded or recently-completed park and ride lot projects, which are itemized in Table 8 below. The supply figures do not include lots within subareas that had no current usage in order to reflect a more realistic picture of the available supply.

It should be noted that due to the ongoing detailed Dulles Corridor Transportation Study being conducted for the provision of rail, the subareas in the Dulles corridor are not being addressed as part of this study, and are therefore not included. The demand estimates represent demand for park and ride spaces within each of the subareas.

Table 7. Subarea Demand vs. Supply

SUBAREAS	2005 Demand	2005 Supply*	2005 Need	2010 Demand	2010 Supply*	2010 Need	2020 Demand	2020 Supply*	2020 Need
Burke	942	1172		1023	1172		1125	1172	
Centreville	753	1010		819	1010		975	1010	
Dale City - Woodbridge	5518	5710		6121	5710	411	6758	5710	1048
Dumfries	470	442	28	536	442	94	608	442	166
Fairfax	122	451		132	451		151	451	
Gainesville	45	125		53	125		70	125	
Inner Areas	54	880		61	880		72	880	
Lower Occoquan	34	175		36	175		40	175	
Leesburg	367	276	91	572	276	296	794	276	518
Manassas	124	822		135	822		171	822	
Mt Vernon	62	200		72	200		86	200	
Purcellville	74	76		83	151		106	151	
Springfield	1017	1441		1115	1441		1253	1441	

* Includes recently completed and funded park and ride projects and does not include lots with no usage.

Table 8. Funded or Recently Completed Park and Ride Lot Projects in the Subareas

Lot Name	Subarea	Number of Spaces	Projected Opening
Prince William Parkway Expansion*(formerly Horner Road lot)	Dale City – Woodbridge	1337	OPEN
Gambrill Road	Burke	235	Fall 2003
Backlick Road North	Springfield	250	Summer 2003
Backlick Road South	Springfield	200	Summer 2003
Purcellville	Purcellville	75	2005
Lorton Road	Lower Occoquan	175	OPEN
Michael's	Mt. Vernon	200	OPEN

*Approximately 1,337 spaces were added that may replace the currently available spaces at Potomac Mills Mall.

In addition to comparing future demand versus future supply, ownership of lots within each subarea was also considered to determine additional subareas in which permanent lot capacity will be needed. The reason for this is that it is preferable to have publicly-owned lots as opposed to leased lots in order to avoid situations in which future lot supply is contingent on

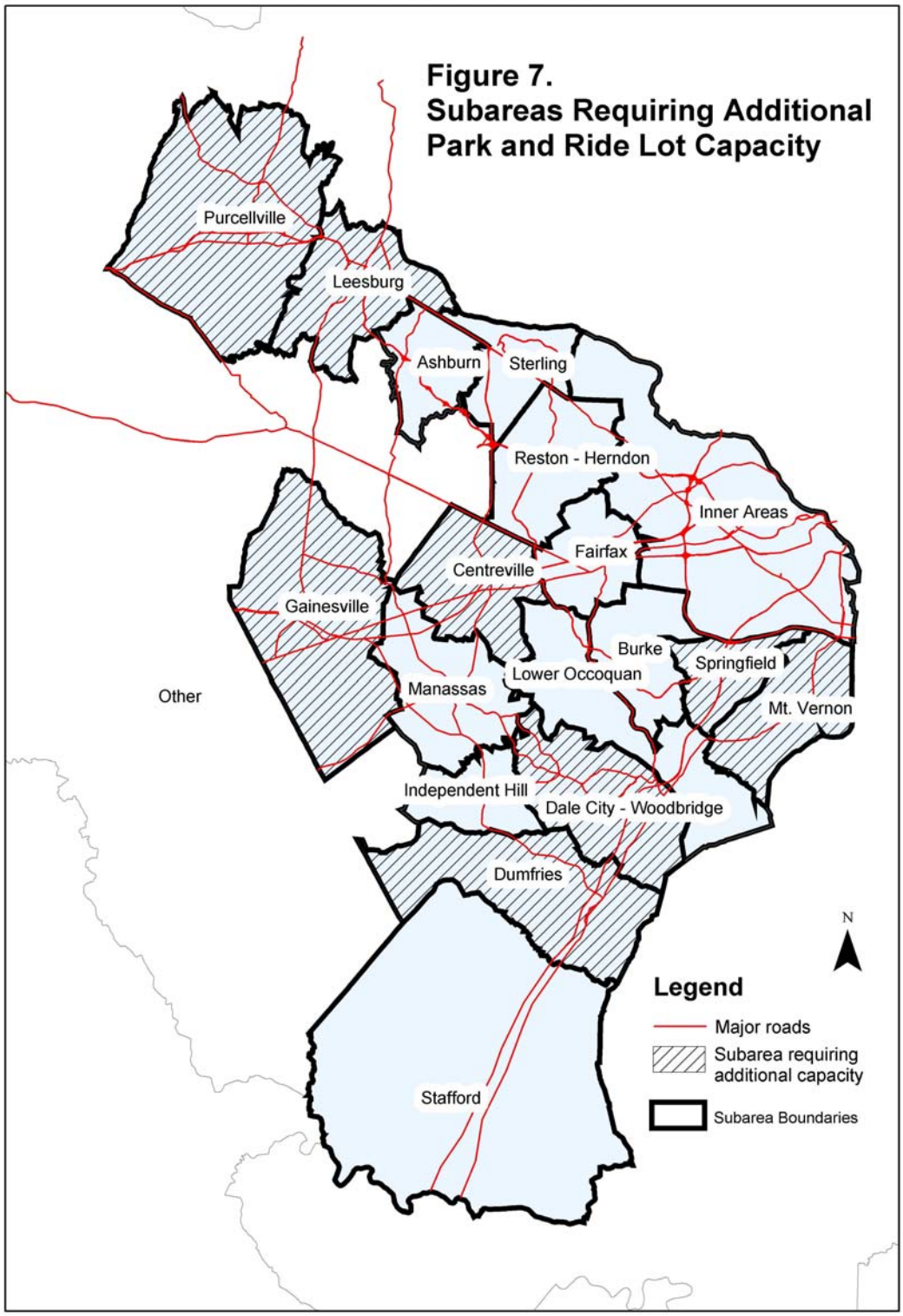
leasing arrangements with private property owners, particularly in subareas with high usage of the leased lots.

A final consideration in determining subareas for additional park and ride lot capacity was a desire by VDOT to add park and ride lot capacity to complement planned HOV facility expansions. Specifically, the Gainesville subarea adjacent to the planned I-66 HOV extension was added. Therefore, the needs estimates used for this study were higher than those shown in Table 7, which were based only on projected demand. Fairfax County had identified its desire for a new park and ride lot to be located along US Route 1 near the terminus of the planned HOV lanes near Route 235. Since this corridor is currently under study, it was not possible at this time to identify specific potential parcels for a new park and ride lot. It is recommended that potential lot locations be identified and evaluated upon completion of the corridor study.

4.3 Subareas Identified for New Park and Ride Lots

Table 9 presents a summary of the subareas in which additional park and ride lot capacity will be needed in the future, along with the reasons for their selection and specific areas where new lot capacity would be most beneficial. A total long-term need for approximately 3,150 spaces was identified. Figure 7 shows the subarea locations.

Following a review of this list by the local jurisdictions, Loudoun County indicated that they were initiating an evaluation of potential new lot locations in the Leesburg area. Accordingly, they communicated a desire to have this study investigate potential locations for a new park and ride lot in the Purcellville area, in lieu of further investigations in the Leesburg area.



Note: Ashburn, Sterling, and Reston-Herndon subareas are not included in this study due to ongoing DCRTP study.

Table 9. Future Subarea Needs

Subarea	Year	# of spaces*	Reason	Best Areas for New Lots
Leesburg	2005 2010 2020 Total	100 200 200 500	Demand growth due to population growth and planned expansion of bus service.	Near the VA7 / US 15 overlap (Leesburg Bypass) and the north end of the airport.
Springfield	2005	1000	Significant number of existing spaces are in leased/ shared use lots, which are less preferable than public-owned lots.	Close proximity to I-95, Fairfax County Parkway and/or Franconia-Springfield Parkway.
Centreville	2005	150	Imbalance in utilization of lots near VA 28 and US 29 vs. park and proffered lots.	Along VA 28 near US 29 and along US 29 west of VA 28.
Dumfries	2005 2010 2020 Total	50 50 50 150	Demand growth due to population growth to the south.	Along VA 234 near I-95 and near Triangle.
Dale City – Woodbridge	2010 2020 Total	400 650 1050	Demand growth due to local population growth and projected I-95/I-395 congestion levels.	Between Minnieville Road and US 1, with access to major arteries.
Gainesville	2005	100	Permanent lot preferred to accommodate potential demand growth associated with planned I-66 HOV extension.	Close proximity to I-66 interchange at US Route 29.
Mt. Vernon	2020	200	Permanent lot preferred to accommodate potential demand growth associated with planned U.S. Route 1 HOV lane extension.	Adjacent to US Route 1 near planned terminus of HOV lane extension at VA 235.

*Needs estimates rounded to nearest 50

5. Site Evaluation

5.0 Site Evaluation

Projected park and ride lot needs and the subareas in which additional capacity is needed were communicated to the local jurisdiction members of the study team. VDOT requested their input on potential parcels where new lots should be evaluated. Following receipt of comments from the local jurisdictions, VDOT identified the following seven site locations to be evaluated for potential new park and ride lots:

1. **Purcellville** – northwest quadrant of Route 7/Route 287/W&OD Trail junction.
2. **Engineer Proving Ground (EPG)** – southeast quadrant of planned new interchange on Fairfax County Parkway.
3. **Route 234 Bypass/I-66** – southeast quadrant of Route 234/I-66 interchange.
4. **US 1/Route 234** – northwest quadrant of planned US Route 1/Route 234 interchange.
5. **Minnieville Road/Caton Hill Road** – northeast quadrant on Minnieville Road/Caton Hill Road intersection.
6. **Telegraph Road** – west side of Telegraph Road, north of its intersection with Caton Hill Road
7. **Gainesville** – southwest quadrant of future realigned Linton Hall Road and US 29 interchange.

These locations were evaluated using the following criteria; in addition, conceptual plans and cost estimates were developed for each:

1. **Site access**: a direct, adequately controlled access point improves access to the HOV facility and the efficiency of transit service.
2. **Proximity to the HOV system**: closer lots allow quicker access to HOV lanes, and the efficiency of bus service is improved.
3. **Proximity to major roads and highways**: bus service is concentrated along these routes and given the structure of the typical street network in the region, leaving these routes imposes a significant time penalty; also provides easier access to the HOV facility.
4. **Transit service potential**: if the area around the lot can contribute passengers to the transit service, the density and efficiency of the service is improved.
5. **User Demand**: potential demand for each potential site.
6. **Size and expansion potential**: lot size is adequate to meet projected demand with space to accommodate additional demand, if needed in the future.
7. **Land and lease acquisition**: cost management.
8. **Land use and zoning**: may determine the feasibility of lighting or feasibility of developing the site.
9. **Safety and security**: a lot perceived as dangerous will be avoided despite other favorable attributes; hazards may include crime, vehicle collisions, or flooding.
10. **Community impacts**: locations in areas with compatible land uses are preferred.

Evaluation activities related to each of the seven locations are described in the remainder of this section. A summary evaluation matrix is presented in Table 10 at the end of this section.

5.1 Purcellville

Loudoun County expressed a need for a new park and ride lot in the Purcellville area, preferably located in the vicinity of the Route 287/Route 7 Bypass/W&OD Trail junction. They noted that Loudoun Express currently serves two church lots in the area, St. Andrew and Hamilton Baptist, that have logistical issues associated with their continued use as park and ride facilities.

VDOT directed the project team to investigate potential parcels in this area for evaluation. A three acre parcel located in the northwest quadrant of the Route 287/Route 7 intersection, which is shown in Figure 8, was identified and evaluated. This site had a number of positive features, including its size, proximity to arterials and a trail, and access. In addition, a commuter parking lot is a permitted use on this parcel under the current Loudoun County Zoning Ordinance; however, a special exemption is needed if the lot exceeds fifty spaces, which this proposed lot does. The conceptual plan for this lot shows a total of 233 spaces at an estimated cost of approximately $ 610,000.

Appendix D contains the conceptual design plan for this lot and details of the associated cost estimate.

5.2 Engineer Proving Ground (EPG)

Fairfax County had identified its desire for a new park and ride lot located along the planned Fairfax County Parkway section to be constructed immediately west of I-95 between the Franconia-Springfield Parkway and I-95. Specifically, the proposed lot location is in the southeast quadrant of the planned new interchange that will provide access to the Engineer Proving Ground (EPG) site and Rolling Road. This location is shown in Figure 9. The conceptual plan for this lot shows a total of 884 spaces at an estimated cost of approximately $ 1,660,000.

Advantages of this site include its large size, proximity to the Fairfax County Parkway and I-95 HOV lanes, adjacent compatible land uses, and public ownership of the parcel. Access to the lot is planned from the EPG Access Road at a signalized intersection. Given the large number of spaces in this lot, it would be advisable to investigate adding a second access driveway to the lot as part of the preliminary engineering process.

Appendix E contains the conceptual design plan for this lot and details of the associated cost estimate.

5.3 Route 234 Bypass / I-66

No potential lot locations were identified within the Centreville subarea, which is projected to have a need for additional park and ride lot capacity. However, a potential location for a new lot to serve the Centreville and Manassas subareas was identified in the southeast quadrant of the I-66/Route 234 Bypass in Manassas. This lot location is shown in Figure 10. Data collected during the baseline assessment showed that a significant number of vehicles parking

Figure 8. Potential Purcellville Park and Ride Lot Location

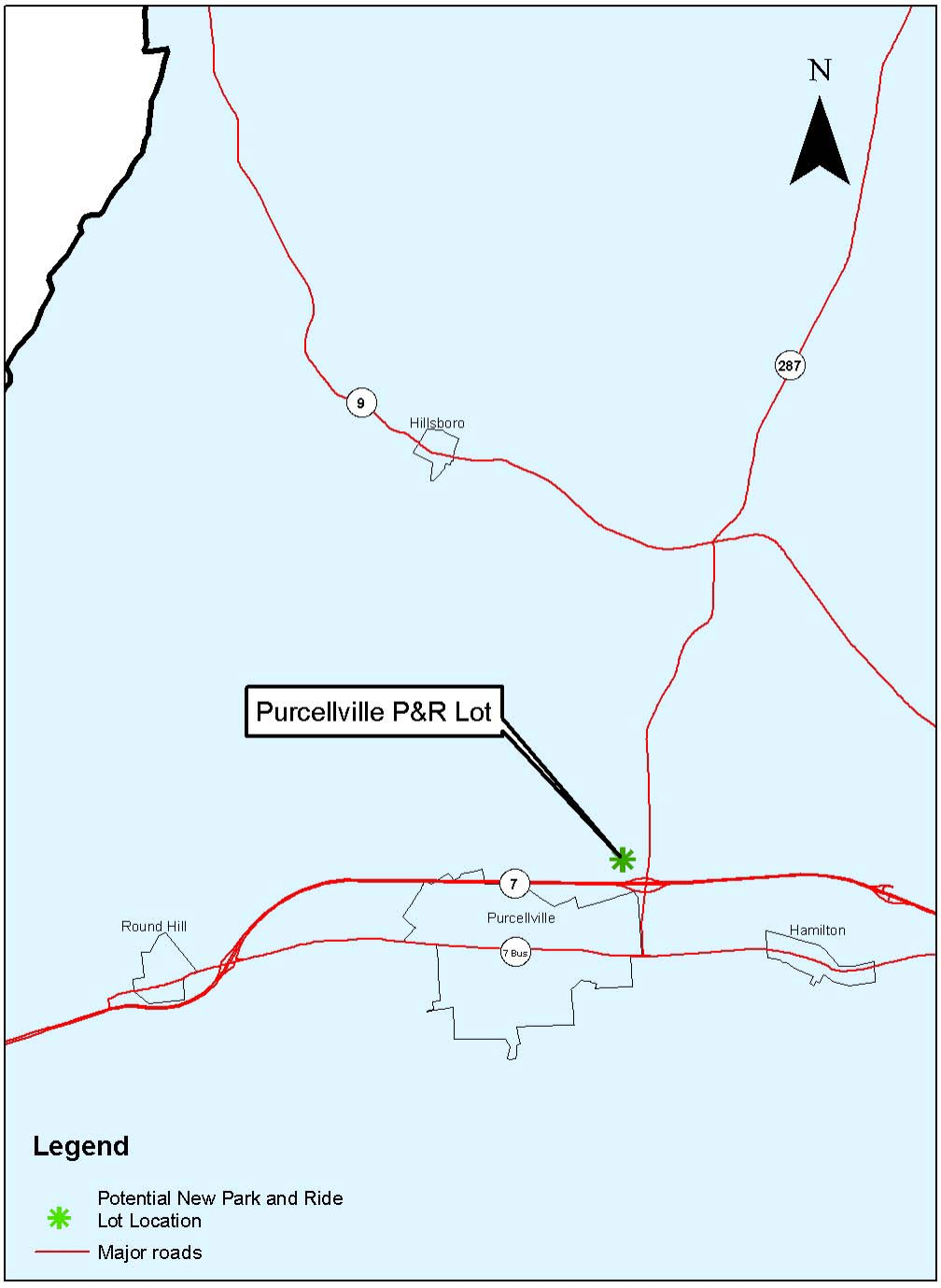


Figure 9. Potential Park and Ride Lots in Dale City/Woodbridge and Springfield

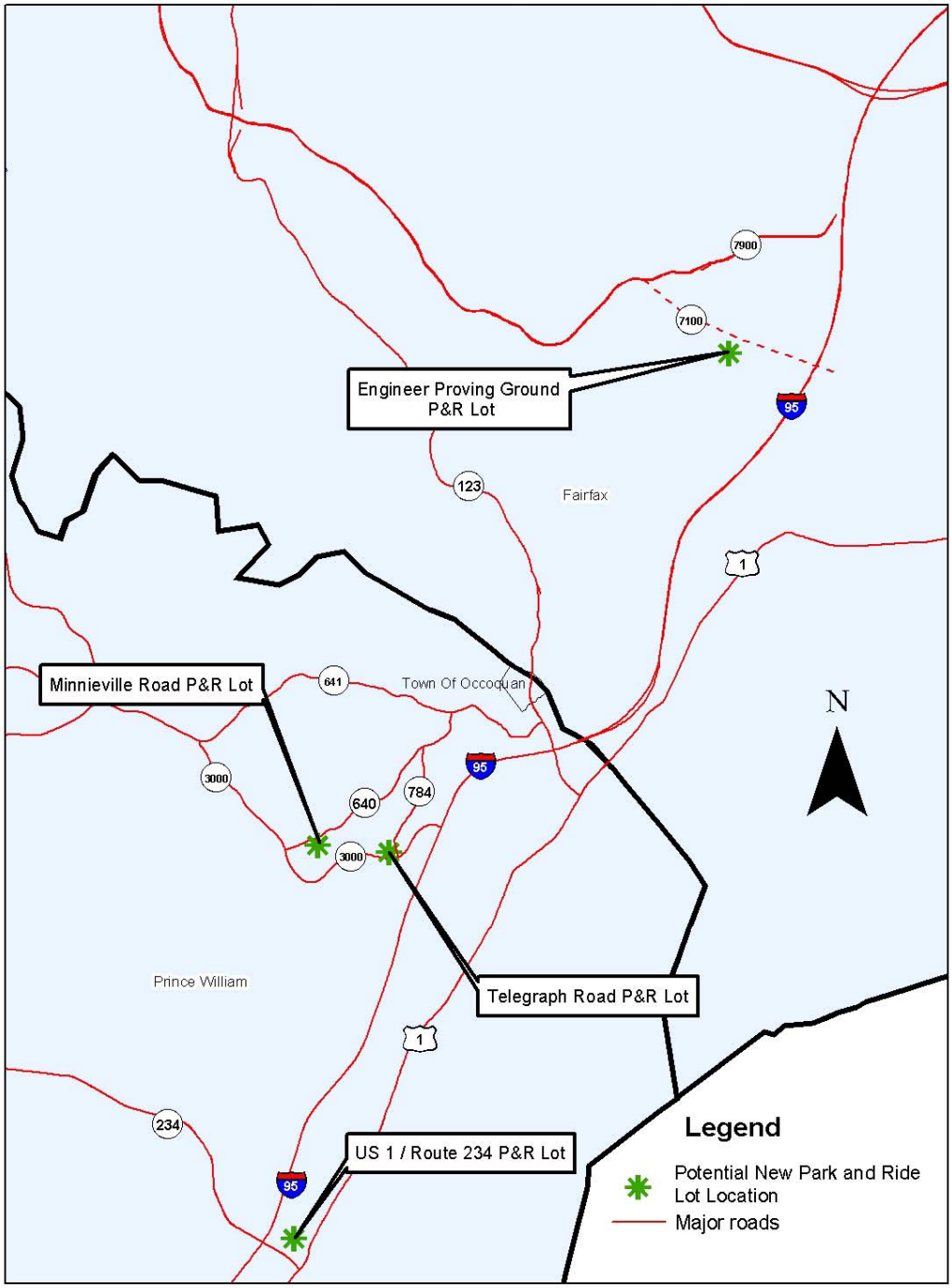
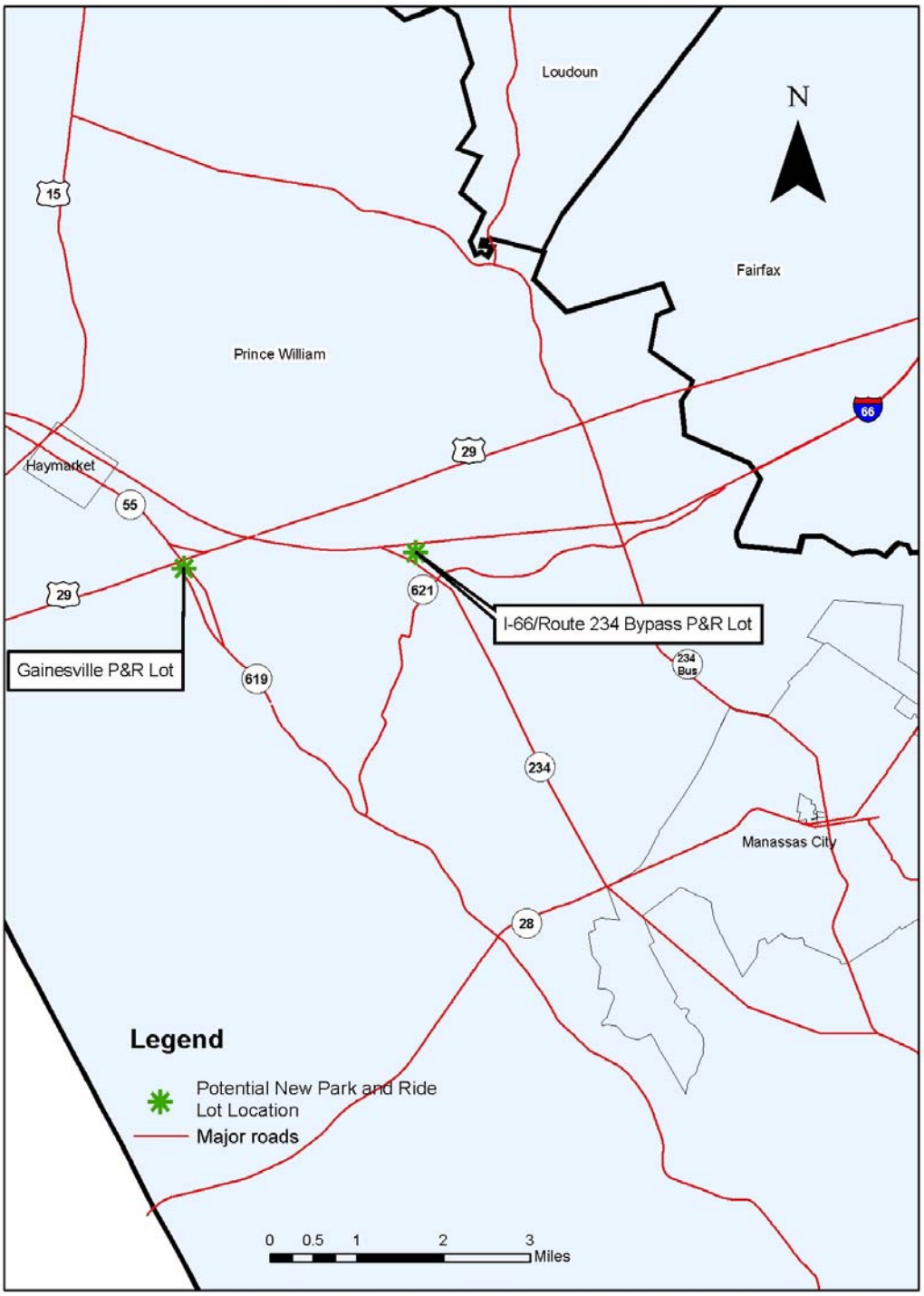


Figure 10. Potential Park and Ride Lots in Gainesville and Manassas



in lots in the Centreville subarea originated in the Manassas area. Since this proposed new lot is located closer to Manassas than the Centreville lots, and is in close proximity to I-66, it is envisioned that this lot will serve to divert demand from the existing Centreville lots. The location of this new lot is shown in Figure 10. The conceptual plan for this lot shows a total of 530 spaces at an estimated cost of approximately $ 1,050,000. This lot will have two access points to Cushing Road. Cushing Road connects to Balls Ford Road, which provides access to the Route 234 Bypass and I-66 interchange.

Advantages of this site include its large size, proximity to the Route 234 Bypass and planned I-66 HOV lane extension, adjacent compatible land uses, and VDOT ownership of the parcel. A disadvantage of the site is the relatively circuitous access scheme via Balls Ford Road and Cushing Road. It would be advisable to investigate options for direct access from the Route 234 Bypass during the preliminary engineering process.

Appendix F contains the conceptual design plan for this lot and details of the associated cost estimate.

5.4 US Route 1 / Route 234

VDOT has plans to re-locate the existing park and ride lot on Route 234 east of I-95 as part of the grade-separation project at US Route 1 and Route 234. The new lot location will be in the northwest quadrant of the new interchange. As currently planned, the re-located lot will have approximately 438 spaces. This will represent an increase of 83 spaces over the existing lot, which has 355 spaces. This will satisfy the ultimate identified need for 150 additional spaces in the Dumfries subarea.

Access to this lot is planned to be from Interstate Drive. Although direct access from Route 234 would be preferable, the geometric design of the planned urban diamond Route 234/ US Route 1 interchange and the planned grades likely preclude this.

5.5 Minnieville Road / Caton Hill Road

In order to accommodate the ultimate projected need of 1,050 additional spaces in the Dale City - Woodbridge subarea, two separate locations were evaluated. Both locations are shown in Figure 9. The first lot is located between Minnieville Road (Route 640) and Caton Hill Road. This lot is shown as a potential future park and ride lot in the 1998 Prince William County Parkway Employment Center Sector Plan.

The conceptual plan for this lot shows a total of 951 spaces at an estimated cost of approximately $2,300,000. This lot will have two access points: one to Minnieville Road and the second to Caton Hill Road.

Advantages of this site include its proximity to the I-95 HOV lanes, ability to address projected needs in this subarea, size, access from both adjacent roadways and compatibility with the local land use plan. A disadvantage is the added right-of-way cost, which is estimated at approximately $500,000.

Appendix G contains the conceptual design plan and details of the associated cost estimate.

5.6 Telegraph Road

In order to accommodate the ultimate projected need of 1,050 additional spaces in the Dale City - Woodbridge subarea, two separate locations were evaluated. Both locations are shown in Figure 9. The first lot, which is described above, is located between Minnieville Road and Caton Hill Road. The second lot is located on Telegraph Road, north of Caton Hill Road. The conceptual plan for this lot shows a total of 835 spaces at an estimated cost of approximately $1,550,000. This lot will have two access points to Telegraph Road.

Advantages of this site include its proximity to the I-95 HOV lanes, ability to address projected needs in this subarea, size, VDOT ownership of the parcel and compatibility with the local land use plan.

Appendix H contains the conceptual design plan and details of the associated cost estimate.

5.7 Gainesville

VDOT identified a parcel in the southwest quadrant of the future Linton Hall Road and US Route 29 interchange as a site to evaluate. This lot would be developed in two phases to coincide with the planned construction phasing. The interim phase will accommodate 100 parking spaces and the ultimate phase will accommodate approximately 402 parking spaces. The interim phase will cost approximately $ 240,000 to construct and the ultimate phase is estimated to cost an additional $ 530,000, for a total ultimate cost of approximately $770,000.

This lot will more than satisfy the identified need for 100 additional spaces in the Gainesville subarea. Additional advantages of this site include its proximity to the planned I-66 HOV lane extension, adjacent compatible land uses, and VDOT ownership of the parcel.

Appendix I contains conceptual design plans for the Phase I and ultimate buildout scenarios for this lot and associated construction cost estimates.

5.8 Site Evaluation Summary

Table 10 presents an evaluation matrix for all of the sites that were evaluated, which are shown in Figure 11. All of the sites are rated either ‘good’ or ‘fair’ against the evaluation criteria, with no sites exhibiting fatal flaws. The EPG and Telegraph Road sites have a ‘good’ rating under all criteria. Construction of all the potential lots described in this section will satisfy identified park and ride needs in the Northern Virginia District.

Figure 11. Potential New Park and Ride Lots

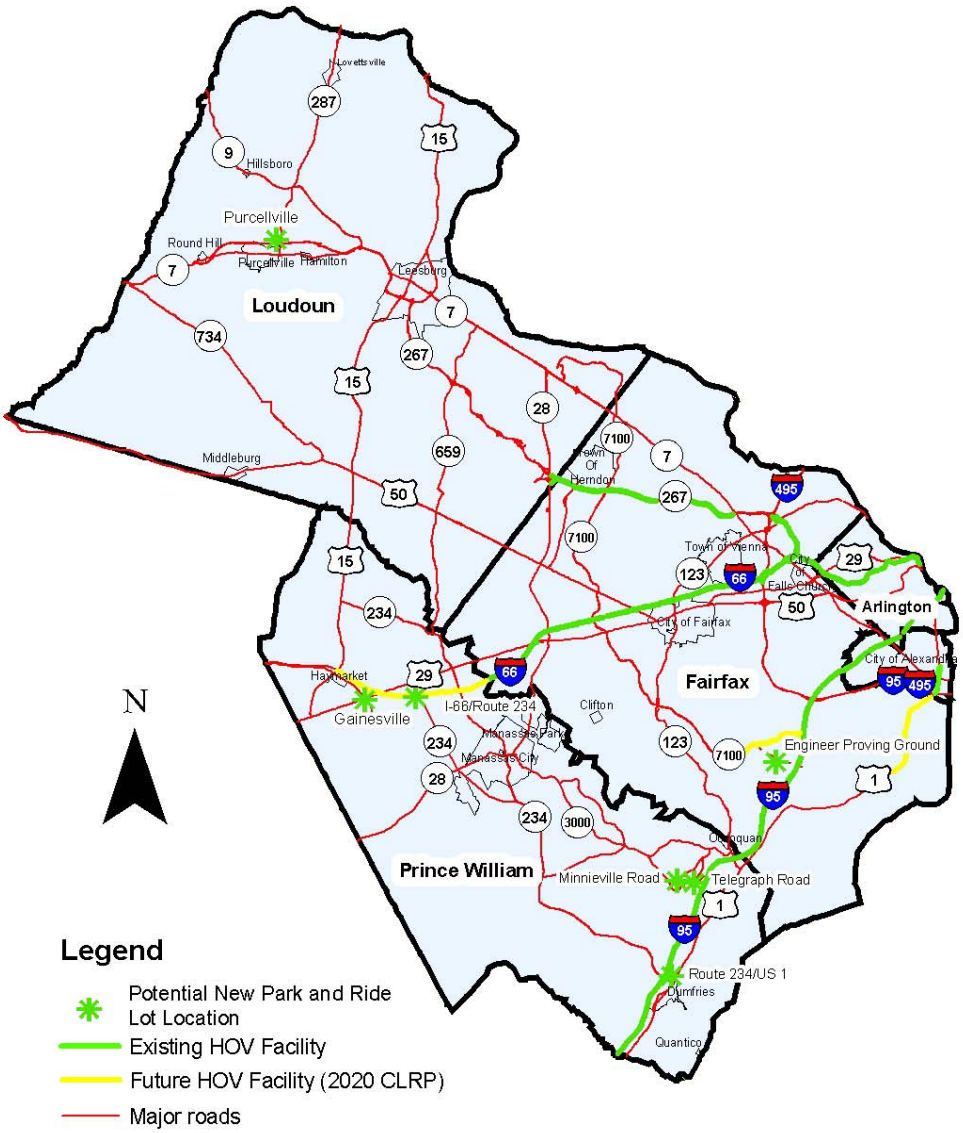


Table 10. Site Evaluation Matrix

Evaluation Criteria	Purcellville	EPG	Rt. 234 Bypass/ I-66	US 1/ Rt. 234	Minnieville Rd./Caton Hill Rd.	Telegraph Rd.	Gainesville
1. Site Access	Good	Good	Fair	Fair	Good	Good	Good
2. Proximity to HOV System	Fair	Good	Good	Good	Good	Good	Good
3. Proximity to Highways and Arterials	Good	Good	Good	Good	Good	Good	Good
4. Transit Service Potential	Fair	Good	Good	Good	Good	Good	Good
5. User Demand	Good	Good	Good	Good	Good	Good	Good
6. Size and Expansion Potential	Good	Good	Good	Good	Good	Good	Good
7. Land and Lease Acquisition	Fair	Good	Good	Good	Fair	Good	Fair
8. Land Use and Zoning	Good	Good	Good	Good	Good	Good	Good
9. Safety and Security	Good	Good	Good	Good	Good	Good	Good
10. Community Impacts	Good	Good	Good	Good	Good	Good	Good

5.9 Implementation Plan

Short Term ~ 2005

- Purcellville
- Leesburg (County Investigation)
- Route 234 Bypass / I-66
- US 1 / Route 234
- Backlick North
- Backlick South
- Gambrill Road

} Currently Under Design

Mid Term ~ 2010

- Engineer Proving Ground (EPG)
- Gainesville
- Minnieville Road / Caton Hill Road
- Telegraph Road

Long Term ~ 2020

- Route 1 – Mt. Vernon

Appendix A

2002 Park and Ride Lot Utilization Data

Appendix A. 2002 Park and Ride Lot Utilization Data

(Source: VDOT)

	Lot #	Lot name	Lot Capacity	Lot usage 2002	% used 2002
Arlington					
	39	Columbia Pike @ Four Mile Run	24	Closed	-
	55	Ballston Public Parking Garage	500	N/A	-
	56	North Quincy Street	356	N/A	-
City of Fairfax					
	50	Kutner Park	15	0	
	51	Truro Episcopal Church	46	N/A	-
	52	North Street Parking Lot	22	N/A	-
	53	Sipan	46	N/A	-
Fairfax					
	27	South Run District Park	52	0	0
	28	Rolling Valley	664	392	59.0%
	29	Sydenstricker Road	170	174	102.4%
	30	Springfield Methodist Church	57	44	77.2%
	31	Springfield Plaza	254	366	144.1%
	32	American Legion Post	100	104	104.0%
	33	Springfield Mall	80	22	27.5%
	34	Springfield Mall - Macy's Parking Deck	500	10	2.0%
	35	Parkwood Baptist Church	18	6	33.3%
	36	Canterbury Woods Park	35	24	68.6%
	37	Wakefield Chapel Recreation Center	50	N/A	-
	41	Stone Road - US 29	372	296	79.6%
	42	Centreville United Methodist Church	144	102	70.8%
	43	Stringfellow Road	385	130	33.8%
	44	Sully Station	139	Closed	-
	45	Poplar Tree Park	279	0	0.0%
	46	Greenbriar Park	60	3	5.0%
	47	St. Paul's Church	109	12	11.0%
	48	Fairfax County Government Center	170	43	25.3%
	49	Fair Oaks Mall	150	15	10.0%
	54	K-Mart at Springfield Plaza	50	58	116.0%
	69	Herndon Monroe	1778	890	50.1%
	70	Reston South Commuter Lot	412	124	30.1%
	71	Wiehle Avenue	368	69	18.8%
	72	Reston East	820	765	93.3%
	78	Nottoway Park	14	7	50.0%
	79	Fair Lanes Bowling Center	35	0	0.0%
Loudoun					
	57	St. Andrew's Presbyterian Church	35	18	51.4%
	58	Hamilton Baptist Church	41	29	70.7%
	59	Holy Trinity Lutheran Church	50	12	24.0%
	62	Ashburn Village Soccer Field	40	1	2.5%
	63	Ashburn Farm	20	N/A	-
	64	Cascades Lot	55	25	45.5%

	66	Sterling Park Shopping Center	45	0	0.0%
	67	Holiday Inn - Sterling	48	12	25.0%
	76	Dulles North	750	237	31.6%
	77	Kohl's - Leesburg	150	198	132.0%
Prince William					
	1	Triangle	29	23	79.3%
	2	US1/VA 234	278	339	121.9%
	3	Brittany Neighborhood Park	85	20	23.5%
	4	Montclair Commuter Lot	50	44	88.0%
	5	Princedale at Northton	43	13	30.2%
	6	Lindendale Commuter Lot	216	40	18.5%
	7	Kirkdale @ Dale Blvd	41	N/A	-
	8	Hillendale Commuter Lot	248	123	49.6%
	9	Dale City Commuter Lot	591	206	34.9%
	10	Cloverdale Model Home Lot	46	Closed	-
	11	Cherrydale @ Dale Blvd	20	4	20.0%
	12	K-Mart, Dale City	240	90	37.5%
	13	Prince William County Stadium	190	0	0.0%
	14	Old Bridge Festival Shopping Center	56	42	75.0%
	15	Bethel United Methodist Church	68	30	44.1%
	16	Christ Chapel	300	3	1.0%
	17	Prince William Square	45	46	102.2%
	18	PRTC Transit Center	200	164	82.0%
	19	Potomac Mills Mall	936	727	77.7%
	20	Prince William Parkway	2267	1640	72.3%
	21	Church of the Brethren	29	5	17.2%
	22	Harbor Drive	200	24	12.0%
	23	Tackett's Mill Specialty Center	170	150	88.2%
	24	Lake Ridge Commuter Lot	600	591	98.5%
	25	Hechinger's - Old Bridge	580	604	104.1%
	26	I-95/123 Loop Interchange	680	100	14.7%
	40	Portsmouth Road Commuter Lot	605	30	5.0%
	73	Marumsco Plaza	200	6	3.0%
	74	Manassas Mall	217	35	16.1%
	75	Virginia Gateway	125	21	16.8%

N/A = not available

Appendix B

Bus Boarding Data

Appendix B. Bus Boarding Data

Lot Location	Lot #	Date Observed	AM Peak Period Boarding
Sydenstricker Road	29	6/14/01	0
Rolling Valley	28	2/15/01	1
Springfield Mall	33	2/2/01	6
Liberia & Centerville	0	1/31/01	21
Lake Ridge Commuter Lot	24	2/2/01	21
Harbor Drive	22	2/1/01	27
Portsmouth Road Commuter	40	2/7/01	29
Festival at Old Bridge	14	2/1/01	31
Lindendale Commuter Lot	6	2/1/01	34
Route 234 / US 1	2	6/22/01	44
Tacketts Mill	23	2/2/01	46
Route 234 Commuter Lot	1	2/5/01	46
Old Bridge & Route 123	25	1/31/01	49
Leesburg Virginia Village	60	9/1/01	52
Potomac Mills	19	2/1/01	68
Stringfellow Road	43	6/14/01	73
Leesburg Kmart	61	9/1/00	74
Route 123 & I-95	26	2/2/01	82
Reston East	72	3/12/01	100
PRTC Transit Center	18	2/15/01	119
Horner Road Commuter Lot	20	2/5/01	136
Dale City Commuter Lot	9	1/31/01	186
Stone Road / US 29	41	6/22/01	296
Herndon Monroe	69	3/12/01	665

Note: Includes data obtained from field counts and available sources.

Appendix C

Existing Lots by Subarea

BMI Lot Number	Lot Name	Subarea
1	Triangle	Dumfries
2	US1/VA 234	Dumfries
3	Brittany Neighborhood Park	Dumfries
4	Montclair Commuter Lot	Dumfries
5	Princedale at Northton	Dale City - Woodbridge
6	Lindendale Commuter Lot	Dale City - Woodbridge
7	Kirkdale @ Dale Blvd	Dale City - Woodbridge
8	Hillendale Commuter Lot	Dale City - Woodbridge
9	Dale City Commuter Lot	Dale City - Woodbridge
10	Cloverdale Model Home Lot	Dale City - Woodbridge
11	Cherrydale @ Dale Blvd	Dale City - Woodbridge
12	K-Mart, Dale City	Dale City - Woodbridge
13	Prince William County Stadium	Dale City - Woodbridge
14	Old Bridge Festival Shopping Center	Dale City - Woodbridge
15	Bethel United Methodist Church	Dale City - Woodbridge
16	Christ Chapel	Dale City - Woodbridge
17	Prince William Square	Dale City - Woodbridge
18	PRTC Transit Center	Dale City - Woodbridge
19	Potomac Mills Mall	Dale City - Woodbridge
20	Horner Road Commuter Lot	Dale City - Woodbridge
21	Church of the Brethren	Dale City - Woodbridge
22	Harbor Drive	Dale City - Woodbridge
23	Tackett's Mill Specialty Center	Dale City - Woodbridge
24	Lake Ridge Commuter Lot	Dale City - Woodbridge
25	Hechinger's - Old Bridge	Dale City - Woodbridge
26	I-95/123 Loop Interchange	Dale City - Woodbridge
27	South Run District Park	Burke
28	Rolling Valley Mall	Burke
29	Sydenstricker Road	Burke
30	Springfield Methodist Church	Springfield
31	Springfield Plaza	Springfield
32	American Legion Post	Springfield
33	Springfield Mall	Springfield
34	Springfield Mall - Macy's Parking Deck	Springfield
35	Parkwood Baptist Church	Burke
36	Canterbury Woods Park	Burke
37	Wakefield Chapel Recreation Center	Burke
38	Jones Point Park	Mt Vernon
39	Columbia Pike @ Four Mile Run	Inner Areas
40	Portsmouth Road Commuter Lot	Manassas
41	Stone Road - US 29	Centreville
42	Centreville United Methodist Church	Centreville
43	Stringfellow Road	Centreville
44	Sully Station	Centreville
45	Poplar Tree Park	Centreville

BMI Lot Number	Lot Name	Subarea
46	Greenbriar Park	Centreville
47	St. Paul's Church	Centreville
48	Fairfax County Government Center	Fairfax
49	Fair Oaks Mall	Fairfax
50	Kutner Park	Fairfax
51	Truro Episcopal Church	Fairfax
52	North Street Parking Lot	Fairfax
53	Sipan	Fairfax
54	K-Mart at Springfield Plaza	Springfield
55	Ballston Public Parking Garage	Inner Areas
56	North Quincy Street	Inner Areas
57	St. Andrew's Presbyterian Church	Purcellville
58	Hamilton Baptist Church	Purcellville
59	Holy Trinity Lutheran Church	Leesburg
60	Leesburg Virginia Village	Leesburg
61	Leesburg K-Mart	Leesburg
62	Ashburn Village Soccer Field	Ashburn
63	Ashburn Farm	Ashburn
64	Cascades Lot	Sterling
65	Wal-Mart	Sterling
66	Sterling Plaza Shopping Center	Sterling
67	Holiday Inn - Sterling	Sterling
68	Innovation Avenue/CIT	Reston - Herndon
69	Herndon Monroe	Reston - Herndon
70	Reston South Commuter Lot	Reston - Herndon
71	Wiehle Avenue	Reston - Herndon
72	Reston East	Reston - Herndon
73	Marumsco Plaza	Dale City - Woodbridge
74	Manassas Mall	Manassas
75	Virginia Gateway	Gainesville
76	Dulles North	Sterling
77	Kohl's	Leesburg
78	Nottoway Park	Inner Areas
79	Fair Lanes Bowling Center	Centreville

Appendix D

Purcellville Park and Ride Lot Concept

COST OPINION
VDOT PARK & RIDE- PURCELLVILLE LOT

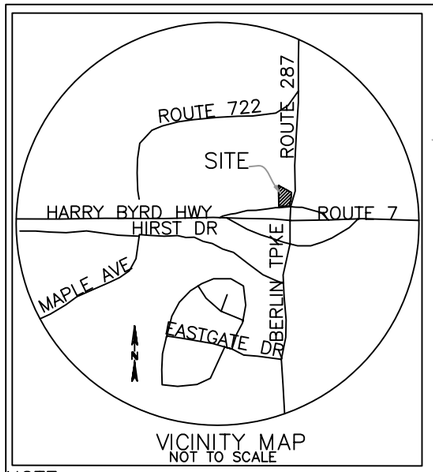
PREPARED BY BURGESS & NIPLE, INC.

NOVEMBER, 2002

DESCRIPTION	QTY	UNIT	UNIT COST	COST
DEMOLITION				
Clearing/Grubbing	3.00	AC	$7,500.00	$22,500
PARKING AREA				
Full Depth Asphalt Placement (1.5" SM-9.5A, 5" BM-25.0, 8" 21-A)	10,240	SY	$24.50	$250,880
Drop Inlets- 3B	3	EA	$3,000.00	$9,000
15" RCP	270	LF	$37.00	$9,990
Curb & Gutter (CG-6)	665	LF	$18.00	$11,970
CG-12	1	EA	$500.00	$500
Concrete Sidewalk	90	SY	$15.00	$1,350
Parking Space Painting	4,900	LF	$1.00	$4,900
MISCELLANEOUS				
Construction Entrance with Wash Rack	1	EA	$3,000.00	$3,000
Cut Material (Top Soil & Waste)	3,060	CY	$10.00	$30,600
Fill Material (Cut to Fill)	550	CY	$3.00	$1,650
Silt Fence	450	LF	$5.00	$2,250
Inlet Protection	3	EA	$200.00	$600
Seeding	6,000	SY	$0.50	$3,000
			TOTAL:	**$352,190**
			MOBILIZATION (5%):	**$17,610**
			CONTINGENCIES (15%):	**$55,470**
			PRELIMINARY ENGINEERING (20%):	**$85,054**
			RIGHT OF WAY COST:	**$99,800**
			TOTAL:	**$610,123**

NOTES:

1. Right of way cost based on 2002 assessed value.
2. Cost estimate does not include costs of lighting, off-site improvements, or other amenities.



VICINITY MAP
NOT TO SCALE

NOTE:

1. TOTAL PARKING 233 SPACES (228 STANDARD + 5HC).

2. THE PARCEL IS IN LOUNDOUN COUNTY GPIN# 452-28-0080, TOTAL AREA IS 3.0 AC, ZONED A-3.

3. THE SOILS, PROPERTY BOUNDARIES AND TOPO INFORMATION WERE TAKEN FROM LOUNDOUN COUNTY GIS DATA.

4. SPEED LIMIT BERLIN TURNPIKE RTE. 287 – 45MPH

5. THE ENTRANCE INTO THE JOHN DEERE DEALER IS NORTH OF THE BUILDING

6. HEAVY UNDERBRUSH OBSCURED POSSIBLE WETLAND, UTILITIES, DRAINAGE SWALES

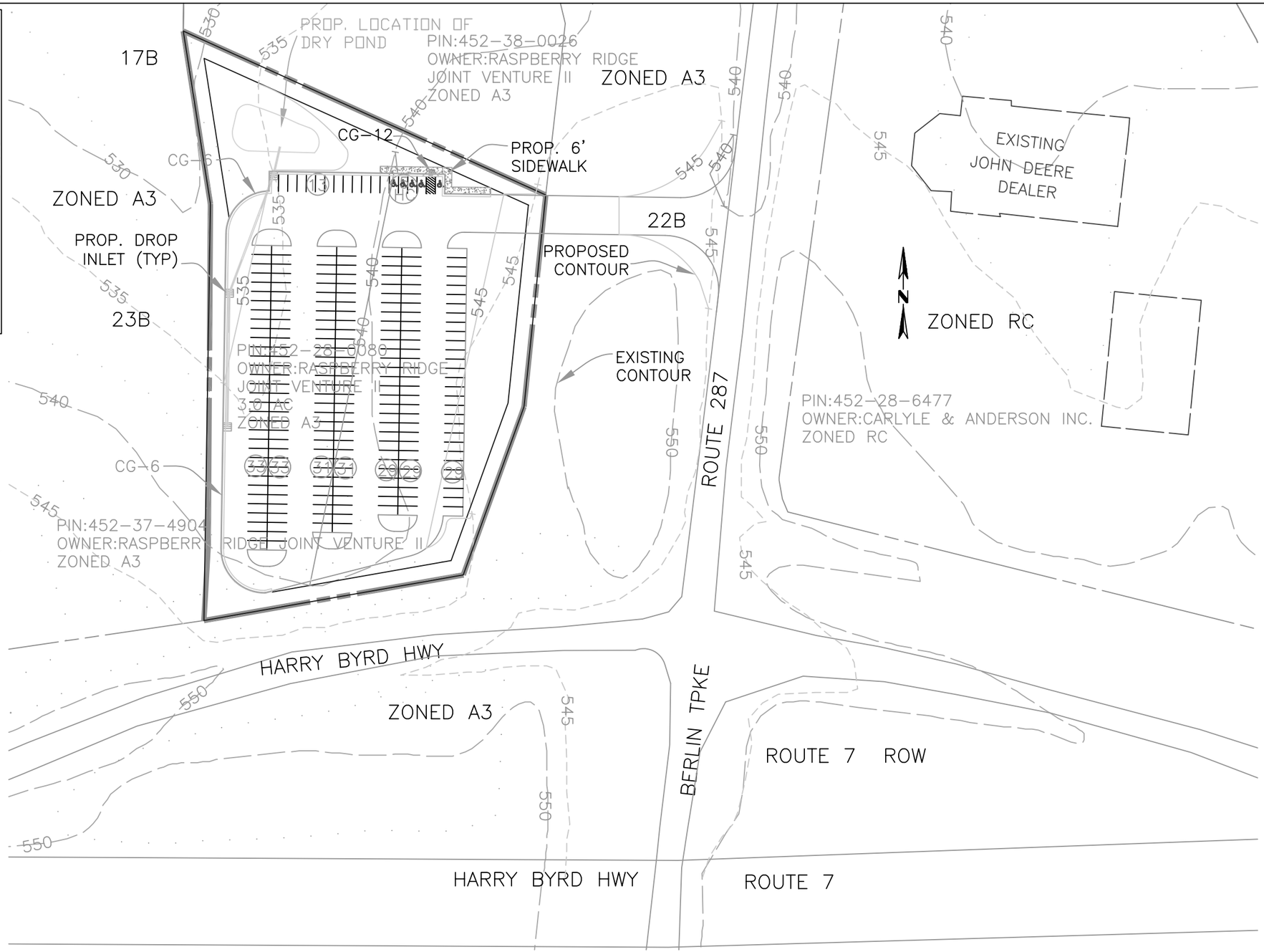
7. GOOD SIGHT DISTANCE ON RTE. 287

8. ACCESS TO SITE TO BE FROM RTE. 287

9. FRONTAGE ALONG RTE. 287– NORTH END IS 4'± ABOVE PAVEMENT GRADE. SOUTH END IS 8'± ABOVE PAVEMENT GRADE

10. FRONTAGE ALONG RTE. 7 RAMP – CUT EXTENDS 200'± FROM THE RAMP/287 INTERSECTION. THEN BEGIN FILL SECTION ON THE RAMP. EXISTING GUARDRAIL BEGINS 400'± FROM THE INTERSECTION.

11. THIS IS A CONCEPTUAL PLAN ONLY AND WILL BE SUBJECT TO CHANGE IN PRELIMINARY AND FINAL DESIGN PROCESSES.



NO.	SOIL NAME	CAT.	SLOPE %	ERODIBILITY	PERMEABILITY	DEPTH TO BEDROCK	DEPTH TO WATER TABLE	SOIL STRUCTURE
17B	MEADOWVILLE LOAM	II	1-7%	MODERATE	MODERATE	<60"	18-30"	B
22B	SWAMPOODLE-LOVETTSVILLE COMPLEX	III	1-7%	MODERATE	MODERATE	12-30"	30-60"	C
23B	PHILOMONT-PURCELLVILLE-SWAMPOODLE COMPLEX	I	2-7%	MODERATE	MODERATE	<60"	<60"	B

BMI
BELLOMO-McGEE, INC.
8330 Boone Boulevard-Suite 700
Vienna, Virginia 22182
703 / 847-3071

Date DEC., 2002
Project No. 29097
JOB NO. 02D031
Dwg. 1 Of 1

HARRY BYRD HWY/ BERLIN TPKE
PURCELLVILLE
VDOT PARK & RIDE

Drawn LNT
Checked GAW
APPROXIMATE SCALE: 1" = 100'

LOUNDOUN COUNTY, VA

BURGESS & NIPLE
4160 PLEASANT VALLEY ROAD, CHANTILLY, VA 20151-1226
PH. (703) 631-9630 FAX (703) 631-6041

Appendix E

EPG Park and Ride Lot Concept

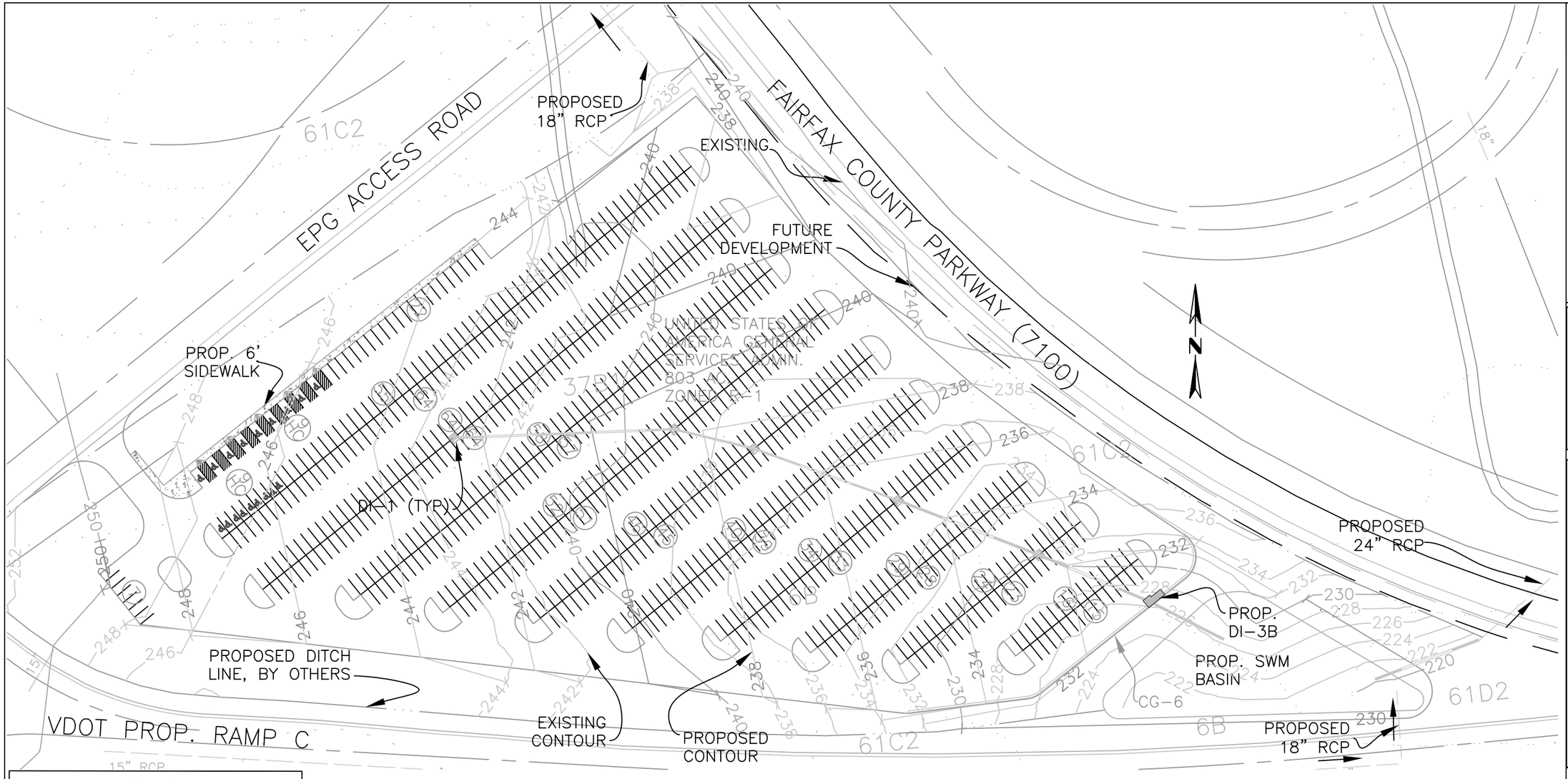
COST OPINION
VDOT PARK & RIDE- EPG

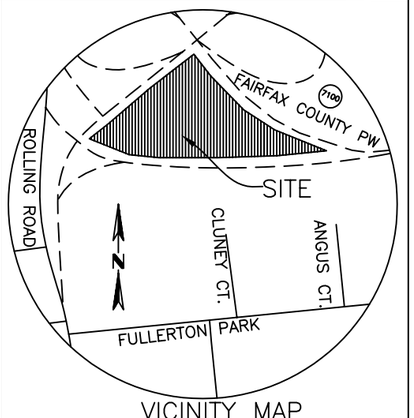
PREPARED BY BURGESS & NIPLE, INC.

NOVEMBER, 2002

DESCRIPTION	QTY	UNIT	UNIT COST	COST
DEMOLITION				
Clearing/Grubbing	9.30	AC	$7,500.00	$69,750
PARKING AREA				
Full Depth Asphalt Placement (1.5" SM-9.5A, 5" BM-25.0, 8" 21-A)	36,000	SY	$24.50	$882,000
DI-3B	1	EA	$4,200.00	$4,200
DI-1	5	EA	$3,100.00	$15,500
18" RCP	425	LF	$42.00	$17,850
24" RCP	330	LF	$52.00	$17,160
Curb & Gutter (CG-6)	350	LF	$18.00	$6,300
CG-12	5	EA	$500.00	$2,500
Concrete Sidewalk	275	SY	$15.00	$4,125
Parking Space Painting	20,440	LF	$1.00	$20,440
MISCELLANEOUS				
Construction Entrance with Wash Rack	1	EA	$3,000.00	$3,000
Cut Material (Top Soil & Waste)	7,452	CY	$10.00	$74,520
Fill Material (Cut to Fill)	4,711	CY	$3.00	$14,133
Silt Fence	1,600	LF	$5.00	$8,000
Inlet Protection	6	EA	$200.00	$1,200
Seeding	14,000	SY	$0.50	$7,000
			TOTAL:	**$1,147,678**
			MOBILIZATION (5%):	**$57,384**
			CONTINGENCIES (15%):	**$180,759**
			PRELIMINARY ENGINEERING (20%):	**$277,164**
			TOTAL:	**$1,662,985**

NOTE: Cost estimate does not include costs of lighting, off-site improvements, or other amenities.





VICINITY MAP
NOT TO SCALE

NOTE:
1. TOTAL PARKING 884 SPACES (866 STANDARD + 18HC).
2. THE PARCEL IS IN FAIRFAX COUNTY GPIN# 0903-01-0032, TOTAL AREA OF THE OVERALL PARCEL IS 803 AC. THE PARK & RIDE LIMIT OF WORK CONTAINS 9.3 ACRES. ZONED R-1.
3. THE SOILS, PROPERTY BOUNDARIES AND TOPO INFORMATION WERE TAKEN FROM FAIRFAX COUNTY GIS DATA.
4. FAIRFAX COUNTY RECORDS SHOW NO 100-YR FLOODPLAIN OR RPA ON THIS SITE.
5. THE SWM BASIN OUTFALL WILL BE TOWARD FAIRFAX COUNTY PARKWAY.
6. PROPOSED GRADE ASSUMES THE PARKING AREA FINISH GRADE WILL CONFORM CLOSELY TO THE EXISTING TOPO TAKEN FROM FAIRFAX COUNTY GIS DATA.
7. THIS IS A CONCEPTUAL PLAN ONLY AND WILL BE SUBJECT TO CHANGE IN PRELIMINARY AND FINAL DESIGN PROCESSES.

NO.	SOIL NAME		SLOPE %	ERODIBILITY	PERMEABILITY	DEPTH TO BEDROCK	DEPTH TO WATER TABLE	PROBLEM CLASS
6B+	HYATTSVILLE FINE SANDY LOAM		2-7%	LOW	MODERATE	10-200'	12-24"	B
37B1	BELTSVILLE SILT LOAM, UNDULATING PHASE		2-7%	MODERATE	LOW	>50'	18-30"	B
61C2	ROLLING LAND, LOAMY AND GRAVELLY SEIMENTS		7-14%	SEVERE	MODERATE	<60'	<60"	A-B
61D2	HILLY LAND, LOAMY AND GRAVELLY SEDIMENTS		14-25%	SEVERE	MODERATE	<60'	<60"	A-B

BMI
BELLOMO-McGEE, INC.
8330 Boone Boulevard-Suite 700
Vienna, Virginia 22182
703 / 847-3071

Date DEC., 2002
Project No. 29097
JOB NO. 02D031
Dwg. 1 of 1

ROLLING ROAD/FAIRFAX COUNTY PW
EPG
VDOT PARK & RIDE

Checked GAW
Drawn LNT
APPROXIMATE SCALE: 1" = 100'

FAIRFAX COUNTY, VA

BURGESS & NIPLE
4160 PLEASANT VALLEY ROAD, CHANTILLY, VA 20151-1226
PH. (703) 631-9630 FAX (703) 631-6041

Appendix F

Route 234 Bypass/ I-66 Ride Lot Concept

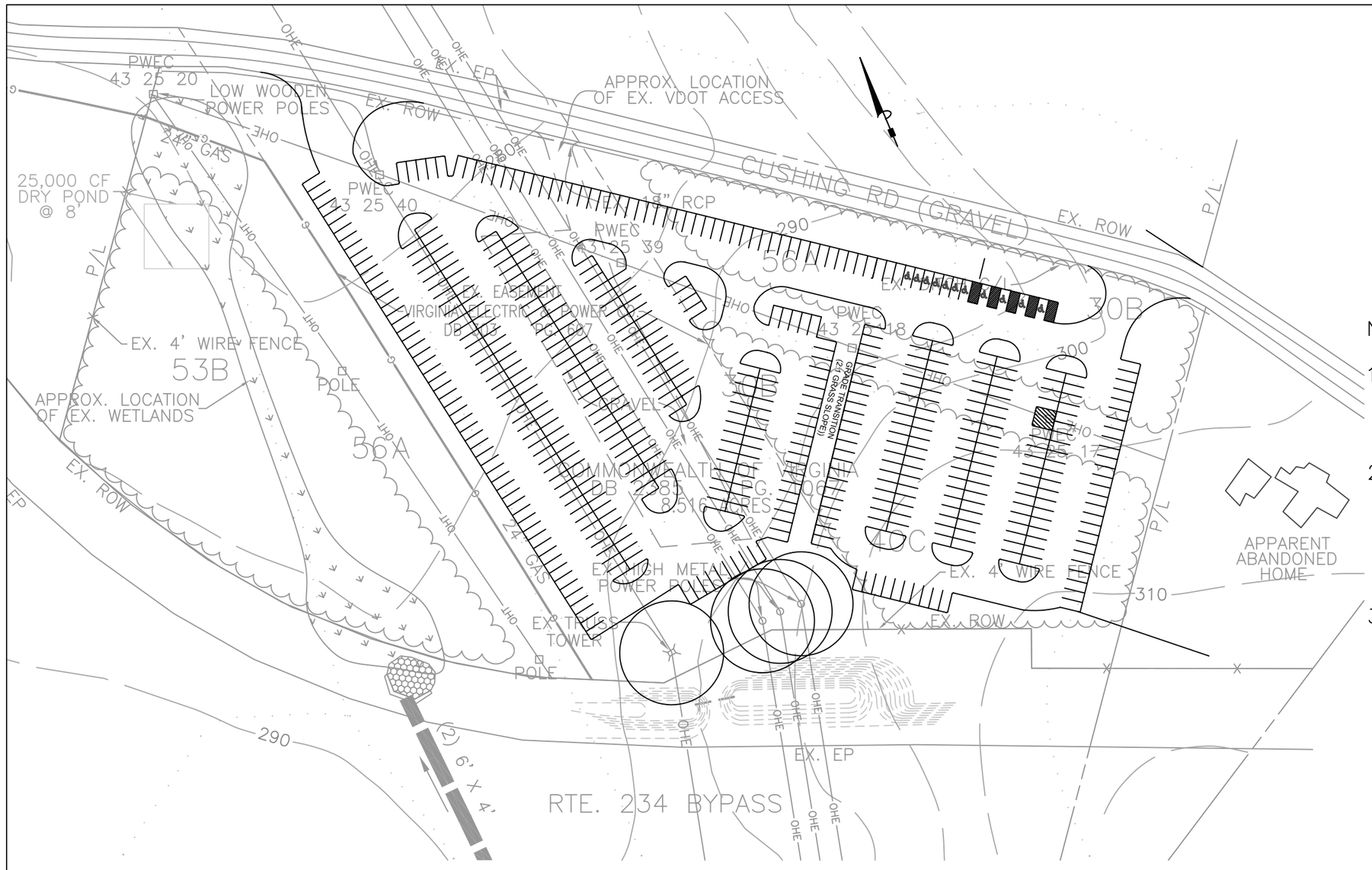
FINAL PARKING COST OPINION
VDOT PARK & RIDE- RT. 234 Bypass/ I-66 (MANASSAS)

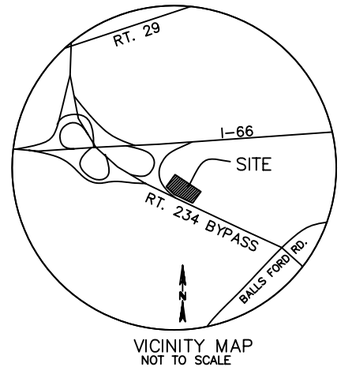
PREPARED BY BURGESS & NIPLE, INC.

August, 2002

DESCRIPTION	QTY	UNIT	UNIT COST	COST
DEMOLITION				
Clearing/Grubbing	5.30	AC	$8,500.00	$45,050
PARKING AREA				
Full Depth Asphalt Placement (1.5" SM-9.5A, 5" BM-25.0, 8" 21-A)	18,333	SY	$24.50	$449,159
Curb & Gutter (CG-6)	4,500	LF	$20.00	$90,000
Drop Inlets- 3B	6	EA	$2,000.00	$12,000
15" RCP	564	LF	$32.00	$18,048
18" RCP	155	LF	$36.00	$5,580
21" RCP	143	LF	$40.00	$5,720
24" RCP	87	LF	$44.00	$3,806
Concrete Sidewalk	550	SY	$6.00	$3,300
CG-12	4	EA	$55.00	$220
Parking Space Painting	15,600	LF	$1.00	$15,600
Handicapped Parking Sign	11	EA	$175.00	$1,925
MISCELLANEOUS				
Cut Material (Topsoil to Offsite)	4,800	CY	$10.00	$48,000
Fill Material (Cut to Fill)	4,000	CY	$3.00	$12,000
Construction Entrance with Wash Rack	1	EA	$3,000.00	$3,000
Silt Fence	1,525	LF	$5.00	$7,625
Inlet Protection	6	EA	$120.00	$720
Seeding	4,850	SY	$0.40	$1,940
			TOTAL:	**$723,693**
			MOBILIZATION (5%):	**$36,185**
			CONTINGENCIES (15%):	**$113,982**
			PRELIMINARY ENGINEERING (20%):	**$174,772**
			TOTAL:	**$1,048,630**

NOTE: Cost estimate does not include costs of lighting, off-site improvements, or other amenities.





VICINITY MAP
NOT TO SCALE

NOTE:

1. TOTAL PARKING 530 SPACES (519 STANDARD + 11 HC).
2. NO PERMANENT PARKING SHALL BE PERMITTED WITHIN 15' OF THE EX. 24" GASLINE.
3. THIS IS A CONCEPTUAL PLAN ONLY AND WILL BE SUBJECT TO CHANGE IN PRELIMINARY AND FINAL DESIGN PROCESSES.

NO.	SOIL NAME	CAT.	SLOPE %	ERODIBILITY	PERMEABILITY	DEPTH TO BEDROCK	DEPTH TO WATER TABLE	SOIL STRUCTURE
30B	JACKLAND SILT LOAM	III	2–7%	MODERATE	MODERATE	60+	12–24	C
40C	MONTALCO SILTY CLAY LOAM	III	7–15%	SEVERE	MODERATE	60+	60+	C
53B	SYCOLIN–KELLY COMPLEX	III	2–7%	MODERATE	MODERATE	20–60	18–36	B
56A	WAXPOOL SILT LOAM	III	0–2%	SLIGHT	MODERATE	60+	0–12	A

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Date DEC., 2002
Project No. 29097
JOB NO. 02D031
Dwg. 1 of 1

RT 234 BYPASS/I-66 LOT

VDOT PARK & RIDE

Drawn EJD
Checked GAW
APPROXIMATE SCALE: 1" = 100'

PRINCE WILLIAM COUNTY, VA

BURGESS & NIPLE
4160 PLEASANT VALLEY ROAD, CHANTILLY, VA 20151–1226
PH. (703) 631–9630 FAX (703) 631–6041

Appendix G

Minnieville Road/Caton Hill Road Park and Ride Lot Concept

COST OPINION
VDOT PARK & RIDE- MINNIEVILLE ROAD

PREPARED BY BURGESS & NIPLE, INC.

OCTOBER, 2002

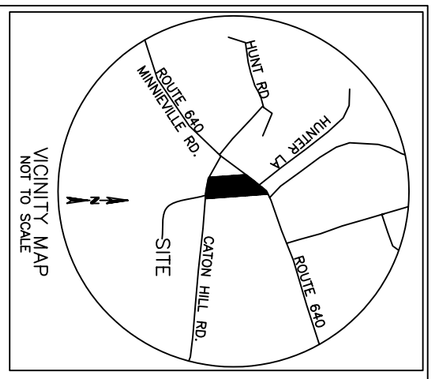
DESCRIPTION	QTY	UNIT	UNIT COST	COST
DEMOLITION				
Clearing/Grubbing	9.20	AC	$7,500.00	$69,000
PARKING AREA				
Full Depth Asphalt Placement (1.5" SM-9.5A, 5" BM-25.0, 8" 21-A)	36,000	SY	$24.50	$882,000
Drop Inlets- 3B	7	EA	$3,000.00	$21,000
24" RCP	450	LF	$52.00	$23,400
30" RCP	610	LF	$73.00	$44,530
Endwall (EW-1)	1	EA	$1,200.00	$1,200
Curb & Gutter (CG-6)	330	LF	$18.00	$5,940
CG-12	5	EA	$500.00	$2,500
Concrete Sidewalk	350	SY	$15.00	$5,250
Parking Space Painting	33,000	LF	$1.00	$33,000
MISCELLANEOUS				
Construction Entrance with Wash Rack	1	EA	$3,000.00	$3,000
Cut Material (Top Soil & Waste)	10,682	CY	$10.00	$106,820
Fill Material (Cut to Fill)	7,700	CY	$3.00	$23,100
Silt Fence	1,500	LF	$5.00	$7,500
Inlet Protection	7	EA	$200.00	$1,400
Diversion Dike	1,500	LF	$5.00	$7,500
Seeding	7,000	SY	$0.50	$3,500
			TOTAL:	**$1,240,640**
			MOBILIZATION (5%):	**$62,032**
			CONTINGENCIES (15%):	**$195,401**
			PRELIMINARY ENGINEERING (20%):	**$299,615**
			RIGHT OF WAY COST:	**$503,200**
			TOTAL:	**$2,300,887**

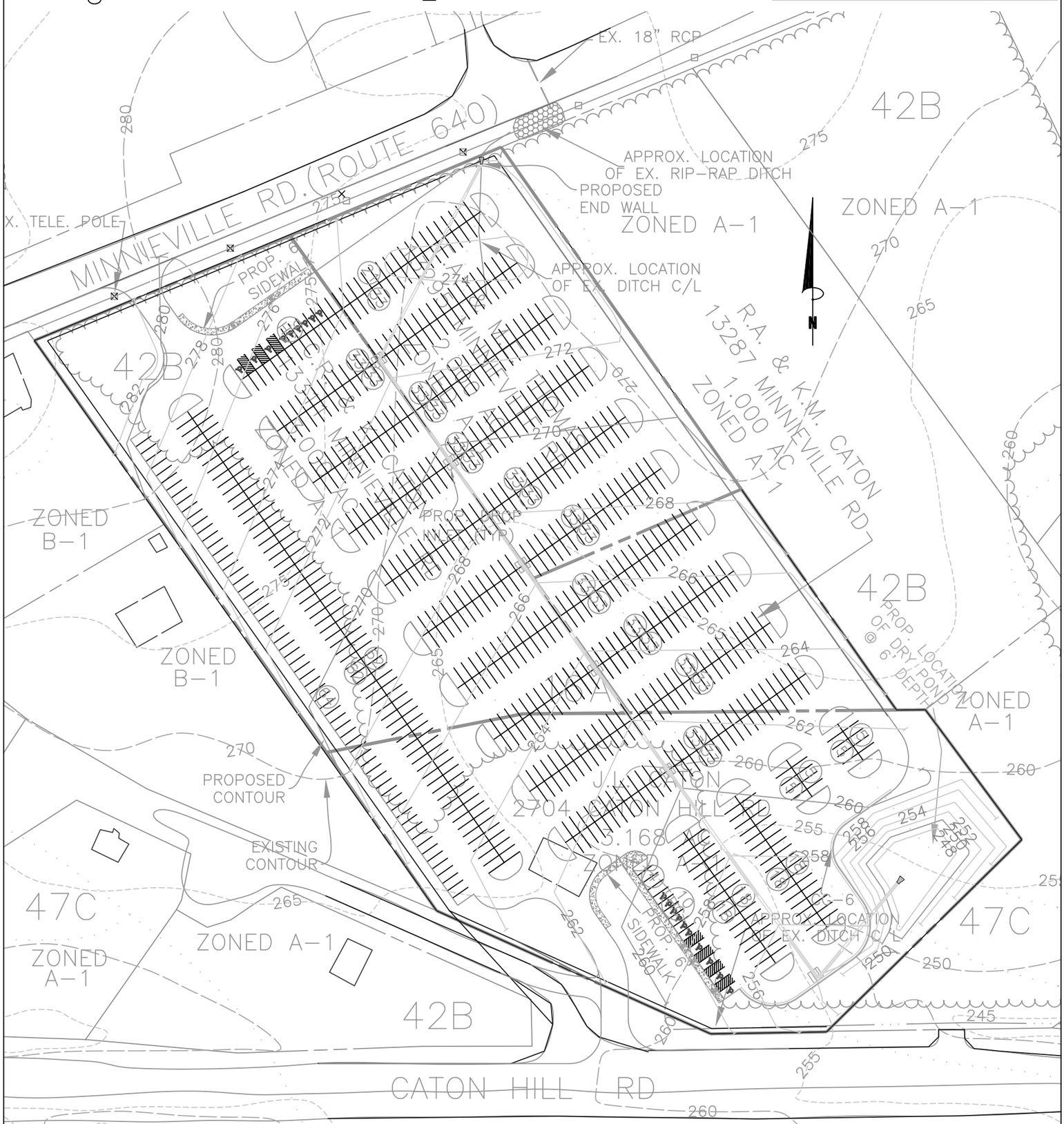
NOTES:

1. Right of way cost based on 2002 assessed value.
2. Cost estimate does not include costs of lighting, off-site improvements, or other amenities.

NOTE:

1. TOTAL PARKING 951 SPACES (932 STANDARD + 19HC).
2. THE 4 PARCELS ARE IN PRINCE WILLIAM COUNTY GPIN# 8292-65-4237, TOTAL AREA IS 9.17 AC, ZONED A-1.
3. THE SOILS, PROPERTY BOUNDARIES AND TOPO INFORMATION WERE TAKEN FROM PRINCE WILLIAM COUNTY GIS DATA.
4. PRINCE WILLIAM COUNTY RECORDS SHOW NO 100-YR FLOODPLAIN OR RPA ON THIS SITE.
5. THE POND OUTFALL WILL BE TOWARD CANTON HILL ROAD.
6. THIS IS A CONCEPTUAL PLAN ONLY AND WILL BE SUBJECT TO CHANGE IN PRELIMINARY AND FINAL DESIGN PROCESSES.





NO.	SOIL NAME	CAT.	SLOPE %	ERODIBILITY	PERMEABILITY	DEPTH TO BEDROCK	DEPTH TO WATER TABLE	SOIL STRUCTURE
16A	DELANCO	III	0-4%	SLIGHT	MODERATE	60+	12-30	A
42B	NEABSCO-QUANTICO CX	II	2-7%	MODERATE	MODERATE	60+	12-30	B
47C	QUANTICO	I*	7-15%	SEVERE	MODERATE	60+	72+	B

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MINNIEVILLE RD / CATON HILL RD
DALE CITY / WOODBRIDGE
VDOT PARK & RIDE

APPROXIMATE SCALE: 1" = 100'
Checked GAW
Drawn EJD

PRINCE WILLIAM COUNTY, VA

Date DEC., 2002
Project No. 29097
JOB NO. 02D031
Dwg. 1 Of 1

BMI
BELLOMO-McGEE, INC.
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Appendix H

Telegraph Road Park and Ride Lot Concept

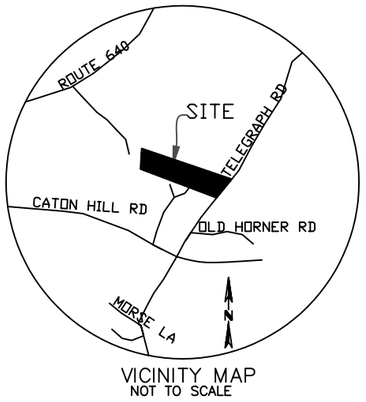
COST OPINION
VDOT PARK & RIDE- TELEGRAPH ROAD

PREPARED BY BURGESS & NIPLE, INC.

September, 2002

DESCRIPTION	QTY	UNIT	UNIT COST	COST
DEMOLITION				
Clearing/Grubbing	7.30	AC	$7,500.00	$54,750
PARKING AREA				
Full Depth Asphalt Placement (1.5" SM-9.5A, 5" BM-25.0, 8" 21-A)	33,000	SY	$24.50	$808,500
Drop Inlets- 3B	7	EA	$3,000.00	$21,000
18" RCP	950	LF	$36.00	$34,200
Curb & Gutter (CG-6)	1,530	LF	$18.00	$27,540
Concrete Sidewalk	720	SY	$15.00	$10,800
CG-12	4	EA	$500.00	$2,000
Parking Space Painting	20,085	LF	$1.00	$20,085
MISCELLANEOUS				
Construction Entrance with Wash Rack	1	EA	$3,000.00	$3,000
Cut Material (Top Soil & Waste)	7,020	CY	$10.00	$70,200
Fill Material (Cut to Fill)	3,500	CY	$3.00	$10,500
Silt Fence	1,100	LF	$5.00	$5,500
Inlet Protection	7	EA	$200.00	$1,400
Seeding	2,800	SY	$0.50	$1,400
			TOTAL:	**$1,070,875**
			MOBILIZATION (5%):	**$53,544**
			CONTINGENCIES (15%):	**$168,663**
			PRELIMINARY ENGINEERING (20%):	**$258,616**
			TOTAL:	**$1,551,698**

NOTE: Cost estimate does not include costs of lighting, off-site improvements, or other amenities.



VICINITY MAP
NOT TO SCALE

NOTE:

1. TOTAL PARKING 835 SPACES (819 STANDARD + 16HC).

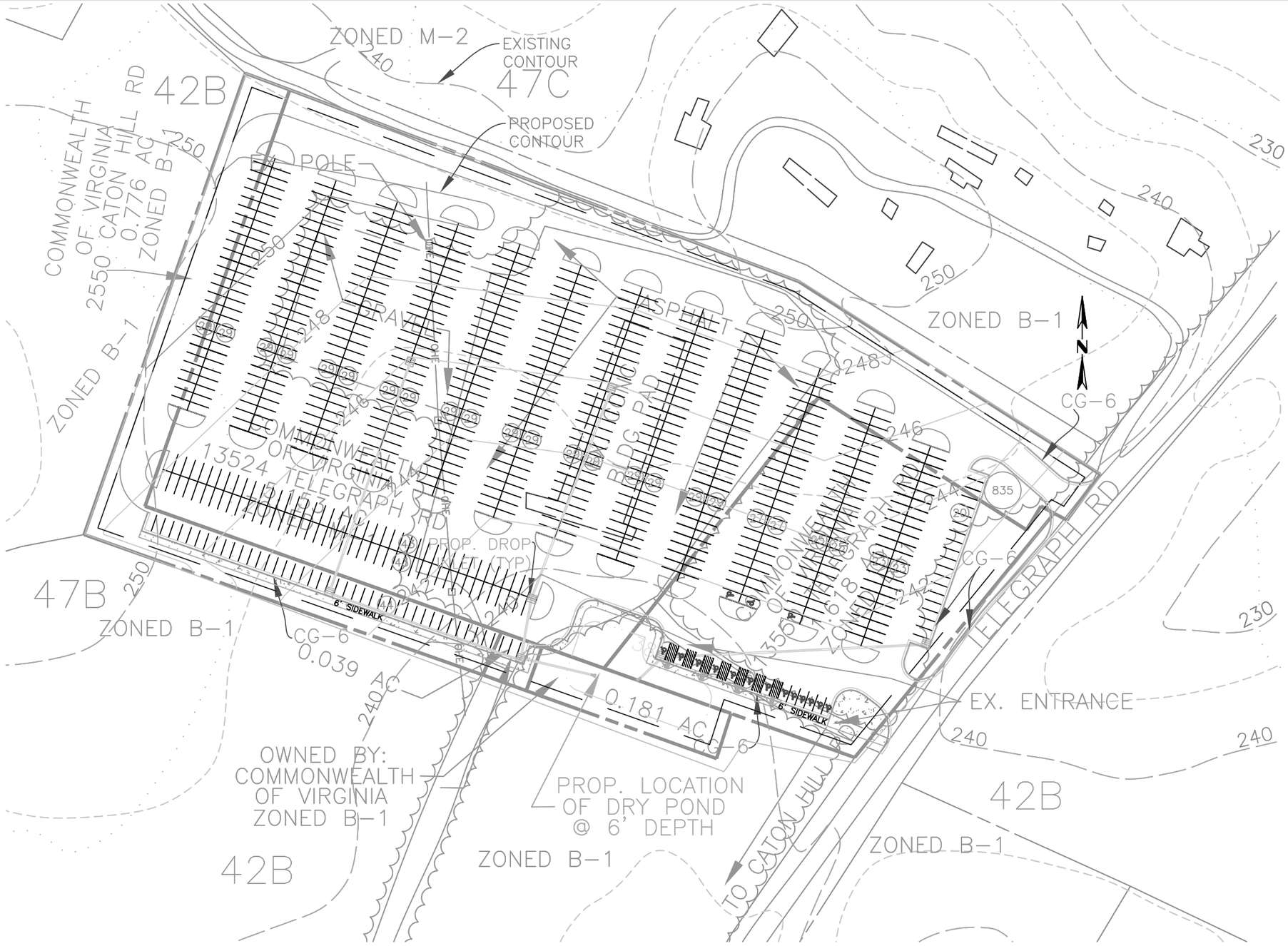
2. THE 5 PARCELS ARE IN PRINCE WILLIAM COUNTY GPIN# 8292-85-5817, TOTAL AREA IS 7.76 AC, ARE ZONED M-1&B-1.

3. THE SOILS, PROPERTY BOUNDARIES AND TOPO INFORMATION WERE TAKEN FROM PRINCE WILLIAM COUNTY GIS DATA.

4. PRINCE WILLIAM COUNTY RECORDS SHOW NO 100-YR FLOODPLAIN OR RPA ON THIS SITE.

5. THE POND OUTFALL WILL BE TOWARD TELEGRAPH ROAD.

6. THIS IS A CONCEPTUAL PLAN ONLY AND WILL BE SUBJECT TO CHANGE IN PRELIMINARY AND FINAL DESIGN PROCESSES.



NO.	SOIL NAME	CAT.	SLOPE %	ERODIBILITY	PERMEABILITY	DEPTH TO BEDROCK	DEPTH TO WATER TABLE	SOIL STRUCTURE
42B	NEABSCO-QUANTICO CX	II	2-7%	MODERATE	MODERATE	60+	12-30	B
47B	QUANTICO	I*	2-7%	MODERATE	MODERATE	60+	72+	B
47C	QUANTICO	I*	7-15%	SEVERE	MODERATE	60+	72+	B

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Project No. 29097
JOB NO. 02D031
Dwg. 1 of 1

CATON HILL RD / TELEGRAPH RD
DALE CITY / WOODBRIDGE
VDOT PARK & RIDE

Drawn EJD
Checked GAW
APPROXIMATE SCALE: 1" = 100'

PRINCE WILLIAM COUNTY, VA

BURGESS & NIPLE
4160 PLEASANT VALLEY ROAD, CHANTILLY, VA 20151-1226
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Appendix I

Gainesville Park and Ride Lot Concept

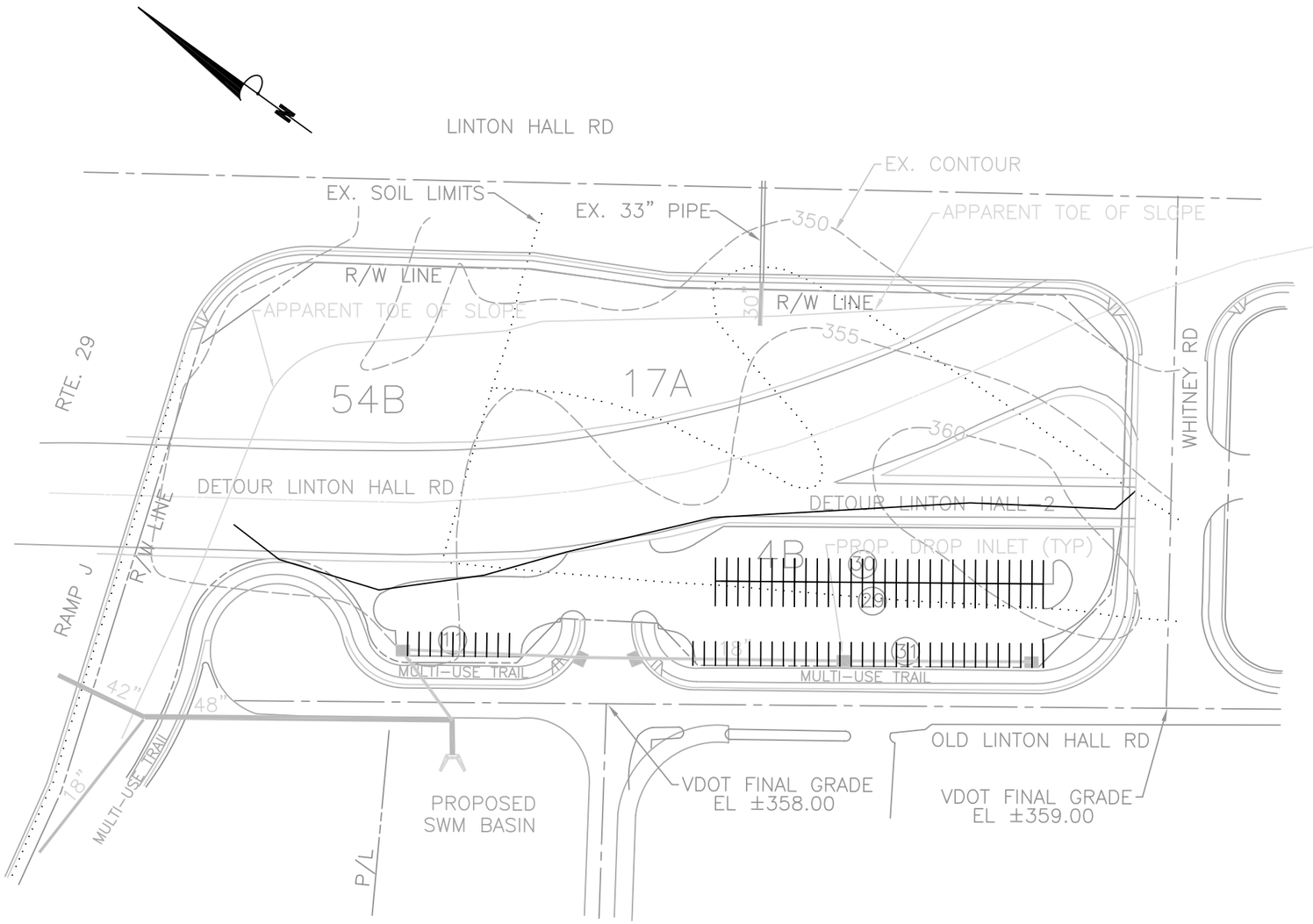
PHASE 1 PARKING COST OPINION
VDOT PARK & RIDE- GAINESVILLE

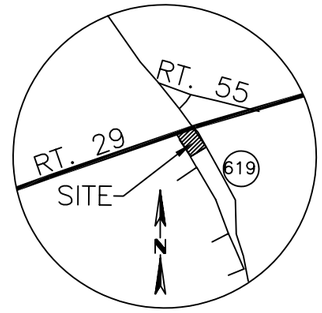
PREPARED BY BURGESS & NIPLE, INC.

July, 2002

DESCRIPTION	QTY	UNIT	UNIT COST	COST
DEMOLITION				
Clearing/Grubbing	1.00	AC	$7,500.00	$7,500
PARKING AREA				
Full Depth Asphalt Placement (1.5" SM-9.5A, 5" BM-25.0, 8" 21-A)	4,800	SY	$24.50	$117,600
Drop Inlets- 3B	5	EA	$2,000.00	$10,000
18" RCP	540	LF	$36.00	$19,440
Wheelstops	58	EA	$35.00	$2,030
Parking Space Painting	3,340	LF	$1.00	$3,340
MISCELLANEOUS				
Construction Entrance with Wash Rack	1	EA	$3,000.00	$3,000
Silt Fence	625	LF	$5.00	$3,125
Inlet Protection	5	EA	$20.00	$100
Seeding	1,000	SY	$0.50	$500
			TOTAL:	**$166,635**
			MOBILIZATION (5%):	**$8,332**
			CONTINGENCIES (15%):	**$26,245**
			PRELIMINARY ENGINEERING (20%):	**$40,242**
			TOTAL:	**$241,454**

NOTE: Cost estimate does not include costs of lighting, off-site improvements, or other amenities.





PHASE 1 NOTES:

1. PHASE 1 PARKING = 100 SPACES
2. THIS PROPERTY IS PRINCE WILLIAM COUNTY GPIN #7397-53-9372, IS 5.63384 ACRES, IS ZONED B-1 AND IS ADDRESSED 14100 WHITNEY RD. GAINESVILLE, VA.
3. PER PRINCE WILLIAM COUNTY RECORDS, THERE IS NO 100-YR FLOOD PLAIN OR RPA ON THIS SITE.
4. THE EXISTING TOPO ON SHEET 1 OF 2 IS FROM PRINCE WILLIAM COUNTY. THE EXISTING SITE APPEARS TO HAVE BEEN REGRADED AFTER THE COUNTY TOPO WAS RUN. EARTHWORK ASSUMPTIONS ARE APPROXIMATE.
5. PHASE 1 GRADING, DRAINAGE & PAVING TO CONFORM TO FINAL DESIGN, EXCEPT NO CURB & GUTTER.
6. BOUNDARY, PROPOSED IMPROVEMENTS, ETC. TAKEN FROM VDOT RTE 29/LINTON HALL RD INTERCHANGE CONSTRUCTION DRAWINGS DATED 1/5/01 AND ARE NOTED "NOT TO BE USED FOR CONSTRUCTION."
7. THE SOIL INFORMATION WAS TAKEN FROM PRINCE WILLIAM COUNTY RECORDS.
8. PHASE 1 PARKING TO BE BETWEEN OLD LINTON HALL RD. AND DETOUR 2.
9. ULTIMATE PARKING TO BE FROM OLD LINTON HALL RD TO APPARENT TOE OF SLOPE.
10. PARKING LOT SWM/BMP TO BE INCORPORATED IN VDOT PROPOSED ROAD IMPROVEMENTS POND. (SEE SHEET 2 OF
11. THIS IS A CONCEPTUAL PLAN ONLY AND WILL BE SUBJECT TO CHANGE IN PRELIMINARY AND FINAL DESIGN PROCESSES.

NO.	SOIL NAME	CAT.	SLOPE %	ERODIBILITY	PERMEABILITY	DEPTH TO BEDROCK	DEPTH TO WATER TABLE	SOIL STRUCTURE
4B	ARCOLA SILT LOAM	II	2-7%	SEVERE	MODERATE	20-40	72+	C
17A	DULLES SILT LOAM	III	0-4%	MODERATE	MODERATE	40-60	12 -- 30	D
54B	URBAN LAND - UDORTHENTS COMPLEX	II	0-7%	SLIGHT	VARIABLE	---	---	---

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Date DEC., 2002
Project No. 29097
JOB NO. 02D031
Dwg. 1 Of 2

GAINESVILLE SITE
PHASE 1 PARKING
VDOT PARK & RIDE

Drawn EJD
Checked GAW
APPROXIMATE SCALE: 1" = 100'

PRINCE WILLIAM COUNTY, VA

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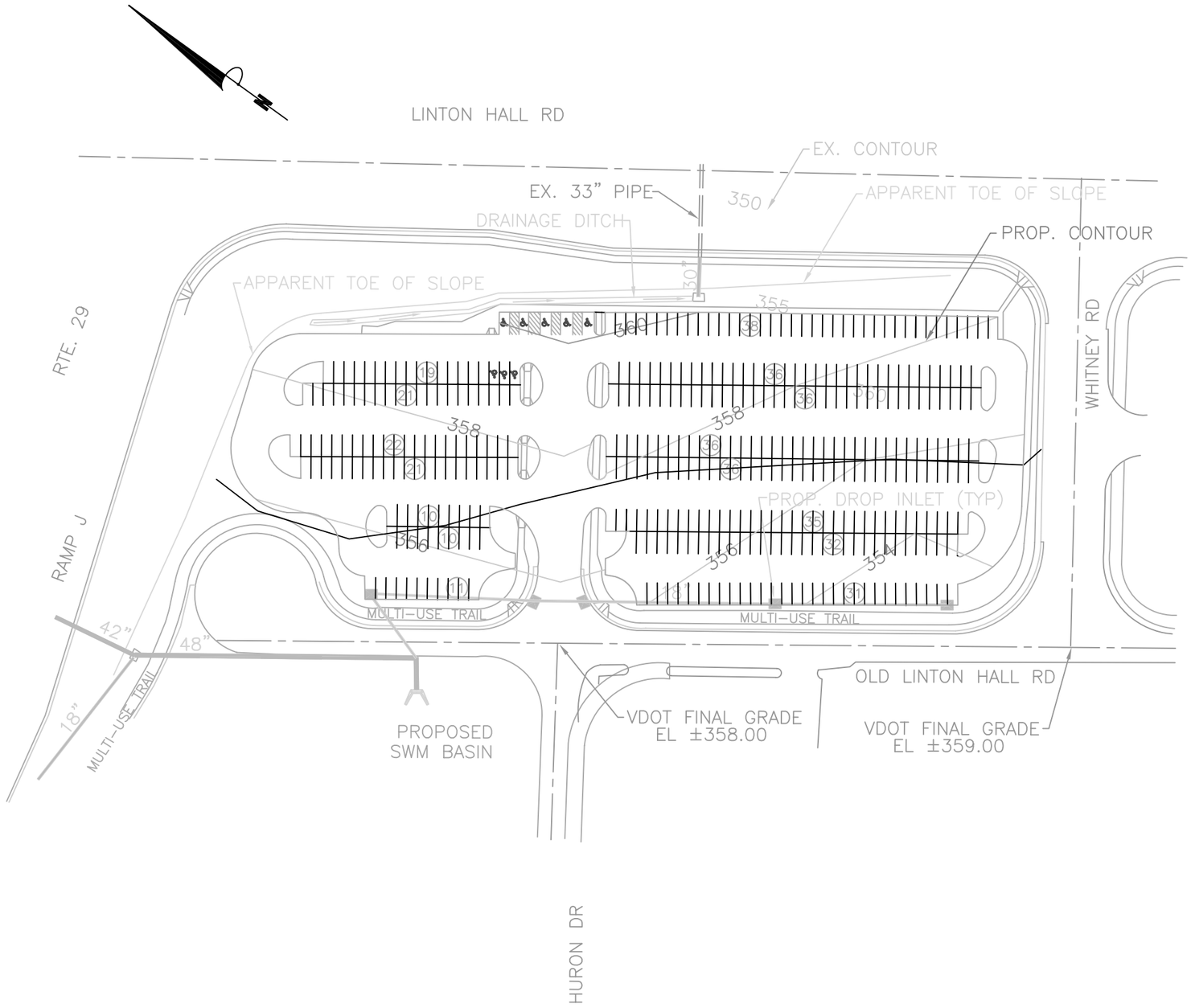
FINAL PARKING COST OPINION
VDOT PARK & RIDE- GAINESVILLE

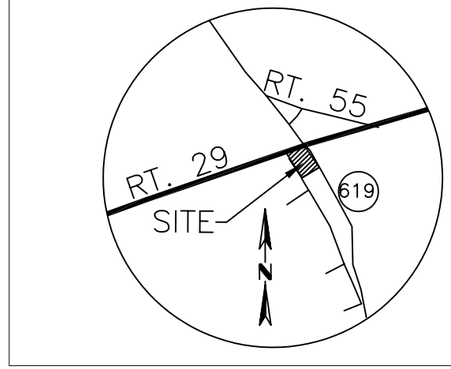
PREPARED BY BURGESS & NIPLE, INC.

July, 2002

DESCRIPTION	QTY	UNIT	UNIT COST	COST
DEMOLITION				
Clearing/Grubbing	2.25	AC	$7,500.00	$16,875
PARKING AREA				
Full Depth Asphalt Placement (1.5" SM-9.5A, 5" BM-25.0, 8" 21-A)	9,525	SY	$24.50	$233,363
Curb & Gutter (CG-6)	2,870	LF	$18.00	$51,660
Wheelstops	256	EA	$35.00	$8,960
Concrete Sidewalk	590	SY	$6.00	$3,540
CG-12	6	EA	$45.00	$270
Parking Space Painting	12,000	LF	$1.00	$12,000
MISCELLANEOUS				
Cut Material	1,605	CY	$6.00	$9,630
Fill Material	1,710	CY	$13.00	$22,230
Construction Entrance with Wash Rack	1	EA	$3,000.00	$3,000
Silt Fence	700	LF	$5.00	$3,500
Inlet Protection	5	EA	$20.00	$100
Seeding	2,000	SY	$0.50	$1,000
			TOTAL:	**$366,128**
			MOBILIZATION (5%):	**$18,306**
			CONTINGENCIES (15%):	**$57,665**
			PRELIMINARY ENGINEERING (20%):	**$88,420**
			TOTAL:	**$530,519**

NOTE: Cost estimate does not include costs of lighting, off-site improvements, or other amenities.





FINAL DESIGN NOTES:

1. ULTIMATE PARKING = 394 SPACES + 8 HC (5 VAN ACCESS) = 402 SPACES
2. DRAINAGE ASSUMES PROPOSED VDOT SWM/BMP POND CAN BE MODIFIED TO SERVE THE PARK & RIDE FACILITY.
3. THIS IS A CONCEPTUAL PLAN ONLY AND WILL BE SUBJECT TO CHANGE IN PRELIMINARY AND FINAL DESIGN PROCESSES.

NO.	SOIL NAME	CAT.	SLOPE %	ERODIBILITY	PERMEABILITY	DEPTH TO BEDROCK	DEPTH TO WATER TABLE	SOIL STRUCTURE
4B	ARCOLA SILT LOAM	II	2–7%	SEVERE	MODERATE	20–40	72+	C
17A	DULLES SILT LOAM	III	0–4%	MODERATE	MODERATE	40–60	12 –– 30	D
54B	URBAN LAND – UDORTHENTS COMPLEX	II	0–7%	SLIGHT	VARIABLE	–––	–––	–––

BMI
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Date DEC., 2002
Project No. 29097
JOB NO. 02D031
Dwg. 2 Of 2

GAINESVILLE SITE
FINAL PARKING DESIGN
VDOT PARK & RIDE

Drawn EJD
Checked GAW
APPROXIMATE SCALE: 1" = 100'

PRINCE WILLIAM COUNTY, VA

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